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(NASA-CR-161954) BREADBOARD STELLAR TRACKER
SYSTEM TEST REPORT, VOLUME 2 Final Report
(Ball Aerospace Systems Div., Boulder)
264 p HC A12/MF A01

N82-16171

CSCI 14B

Unclass

G3/19 07992



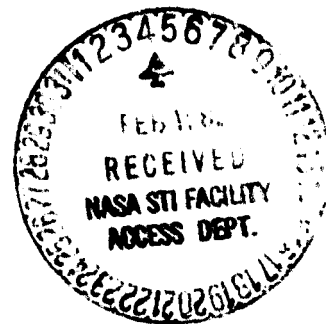
BREADBOARD STELLAR TRACKER SYSTEM
TEST REPORT

TR81-04

August 1, 1981

VOLUME II

Prepared For
George C. Marshall Space Flight Center
Contract No. NAS8-34263



ACQUISITION COARSE AND FINE MAPS

- COARSE - DARK MAP AT 0°C
- FINE - DARK MAP AT 0°C
- FINE - DARK MAP AT 16°C

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| 000745 | 000638 | 000607 | 0005C6 | 00059F | 0005B2 | 0005AA | 000601 | 0005A4 | 0005B1 | 000573 | 000574 | 000569 | 000559 | 000569 | 000567 |
| 000574 | 00056B | 000561 | 000575 | 000557 | 000577 | 00055D | 000565 | 000567 | 000564 | 00055C | 00055F | 00055F | 000559 | 000553 | 000551 |
| 0004A0 | 000555 | 000561 | 00056C | 00055F | 000569 | 00056B | 0005F0 | 00057A | 000576 | 000573 | 00056D | 000579 | 00055B | 000575 | 000564 |
| 000566 | 00056F | 000577 | 000572 | 000580 | 000573 | 00057E | 000565 | 000579 | 00056E | 000575 | 000554 | 000564 | 000557 | 00056B | 0004C4 |
| 0005E2 | 0005D2 | 00057E | 00057F | 000543 | 00054D | 000543 | 00053F | 000545 | 000531 | 000533 | 00052C | 00051C | 000522 | 00050E | 000517 |
| 000512 | 000522 | 000506 | 000501 | 000503 | 0004FB | 000514 | 000500 | 000503 | 0004F3 | 00051D | 000512 | 00050C | 000505 | 00050B | 0004EA |
| 000454 | 00050E | 000509 | 000519 | 00050E | 00050C | 00051E | 00050F | 00053F | 00065E | 000505 | 000532 | 000505 | 00051D | 000514 | 00052B |
| 000507 | 000510 | 000524 | 000516 | 00051B | 00051B | 000531 | 00050D | 00050E | 00051E | 000530 | 000524 | 000510 | 000515 | 000510 | 00045B |
| 0005D2 | 0005A1 | 00070B | 000556 | 000540 | 00052E | 000534 | 00052E | 000520 | 000542 | 000527 | 00050A | 000514 | 00051A | 00051A | 00050D |
| 000501 | 00050B | 0004FA | 000507 | 000514 | 0004F9 | 00050C | 0004F7 | 000509 | 000502 | 000512 | 0004EB | 0004F1 | 0004FC | 000503 | 000504 |
| 000445 | 000507 | 000511 | 0004FC | 00050E | 00050E | 000511 | 00051A | 000537 | 00052A | 000519 | 00051B | 000501 | 000511 | 000500 | 000516 |
| 00051D | 000522 | 000515 | 000523 | 000511 | 000539 | 00050B | 00051A | 000523 | 00052C | 000523 | 000502 | 000501 | 0004F5 | 0004EE | 00043C |
| 0005C1 | 0005A0 | 000560 | 00053F | 000548 | 00052F | 000533 | 000538 | 00051A | 000520 | 00050D | 0004FE | 000503 | 000523 | 00050A | 00050C |
| 000512 | 00052C | 00050C | 000515 | 000506 | 000523 | 00050A | 00050B | 0004F3 | 000510 | 000502 | 0004DA | 0004F7 | 000502 | 00051B | 0004FC |
| 00043F | 000513 | 00050F | 0004FD | 000501 | 000514 | 00052A | 00051D | 000554 | 000526 | 00051A | 000519 | 000514 | 00050C | 000516 | 00051A |
| 000507 | 00051A | 000520 | 00051B | 00050E | 000511 | 000512 | 000519 | 00051B | 000523 | 000510 | 00051B | 000514 | 000514 | 000502 | 000459 |
| 0005AA | 000574 | 000573 | 000551 | 00055A | 000548 | 000531 | 000530 | 00051C | 000519 | 00052A | 00051B | 000520 | 000516 | 0004FB | 000512 |
| 00051E | 000520 | 000502 | 00051E | 000528 | 000519 | 00050E | 00050D | 00050D | 000507 | 0004FF | 000503 | 0004E5 | 000509 | 0004FA | 000506 |
| 000449 | 0004FF | 000506 | 000508 | 000511 | 000516 | 00051D | 0004F5 | 000522 | 000521 | 000526 | 000510 | 00050B | 000514 | 000500 | 000517 |
| 000519 | 000524 | 00050C | 0004FC | 00051A | 000515 | 000517 | 000524 | 00051B | 00051C | 000512 | 000514 | 00050E | 00050A | 0004F3 | 000467 |
| 00057F | 000560 | 00055C | 000545 | 00054E | 000548 | 000532 | 000536 | 000510 | 000511 | 000514 | 000501 | 000513 | 000505 | 00050C | 000510 |
| 000512 | 000506 | 000516 | 0004F7 | 000524 | 000512 | 00051A | 00050D | 000507 | 000505 | 0004E3 | 0004FC | 0004EE | 0004FB | 00050D | 00050A |
| 00042F | 000502 | 0004F2 | 00051A | 000506 | 000503 | 000523 | 000512 | 00052E | 000518 | 000517 | 000513 | 00050D | 000504 | 00050E | 000502 |
| 000515 | 000509 | 00050F | 000503 | 00052F | 000506 | 000522 | 000502 | 000522 | 000509 | 000512 | 000513 | 000520 | 0004F6 | 0004EB | 000471 |
| 00057F | 000550 | 000536 | 000545 | 000547 | 000529 | 000530 | 000513 | 00050F | 00050B | 000524 | 00050D | 000519 | 000513 | 000507 | 0004FE |
| 000527 | 000510 | 00050F | 000503 | 000514 | 00050D | 00050A | 000512 | 0004EB | 000504 | 0004EE | 0004FB | 0004F8 | 00050C | 0004F6 | 0004F8 |
| 00043D | 000510 | 0004FC | 000506 | 00050B | 00050D | 00056A | 00051E | 00052B | 00057B | 0004F7 | 00050B | 000505 | 000501 | 000511 | 00050C |
| 000502 | 000504 | 000512 | 000514 | 000519 | 00050F | 000521 | 00052E | 000521 | 00051E | 000512 | 000516 | 000510 | 0004F9 | 0004EC | 00045B |
| 000531 | 000550 | 000541 | 000544 | 000533 | 00053B | 000517 | 000532 | 00050B | 00051D | 00050A | 00051A | 0004FD | 0004FE | 000511 | 000504 |
| 000519 | 00050A | 00050F | 00050D | 00050C | 0004EF | 000500 | 000520 | 0004FA | 0004F1 | 0004FE | 0004F1 | 0004FB | 0004EE | 00050B | 000505 |
| 000449 | 0004F7 | 0004F3 | 00050C | 0004F9 | 000507 | 00050B | 00051B | 000502 | 000573 | 0004EF | 000516 | 000500 | 000512 | 00050A | 000500 |
| 0004FA | 000500 | 00050B | 000535 | 000514 | 00051A | 000514 | 00050C | 00050B | 00052A | 000520 | 000519 | 000521 | 0004F5 | 0004EB | 000466 |
| 00054C | 000541 | 00053A | 000545 | 000532 | 000533 | 00050C | 000540 | 000514 | 00051E | 000521 | 000529 | 000501 | 00050B | 0004F1 | 000516 |
| 000504 | 000533 | 000514 | 000503 | 000501 | 000504 | 0004FF | 0004EA | 0004F5 | 0004F8 | 0004FC | 0004E3 | 000506 | 0004EF | 000507 | 00051B |
| 00045D | 0004F9 | 000504 | 0004F0 | 000500 | 0003FA | 00059F | 000515 | 000527 | 000571 | 0004FD | 000501 | 0004F5 | 0004FB | 000503 | 000507 |
| 000501 | 000517 | 000501 | 000509 | 00051A | 00050D | 00050C | 00051B | 00052D | 000516 | 00051F | 000513 | 0004F8 | 00050A | 00050A | 00045C |
| 000539 | 000553 | 000536 | 00053F | 00050A | 00052D | 00052F | 00051B | 000504 | 00050F | 00051F | 000502 | 000512 | 000512 | 000516 | 0004FB |
| 000504 | 000511 | 000506 | 000511 | 000506 | 00051D | 0004FB | 0004FE | 000502 | 00041D | 000507 | 000501 | 0004FC | 000502 | 0004F5 | 0004FD |

ORIGINAL PAGE IS
OF POOR QUALITY

TR81-04

| | | | | | | | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 000437 | 000500 | 0004F8 | 0004E8 | 0004F1 | 0004EE | 000546 | 0004FC | 000503 | 000508 | 0004FE | 0004F0 | 00050A | 0004FC | 000508 | 0004EE |
| 0004F3 | 000520 | 000509 | 000505 | 000517 | 000526 | 000523 | 000513 | 000517 | 000515 | 000510 | 000511 | 000513 | 000509 | 00050D | 000466 |
| 000547 | 00054F | 000540 | 000525 | 00051A | 00052C | 000528 | 000540 | 000538 | 00047D | 000524 | 000513 | 0004FC | 00050C | 00050F | 000510 |
| 000506 | 000514 | 000502 | 0004FD | 00050B | 00050D | 00047C | 000500 | 0004F6 | 0004EC | 0004E3 | 0004F8 | 000505 | 000511 | 0004F9 | 000515 |
| 000448 | 000509 | 000504 | 000502 | 0004F3 | 0004FF | 0004FE | 000504 | 000513 | 0004F4 | 00050B | 0004FB | 0004FD | 000503 | 000500 | 0004F2 |
| 000508 | 000500 | 000516 | 000513 | 000519 | 000517 | 000512 | 000511 | 000506 | 000503 | 000503 | 000517 | 000513 | 000517 | 0004F9 | 00047C |
| 000529 | 00054C | 000528 | 000524 | 00052F | 000517 | 000541 | 000535 | 00051C | 00050E | 000520 | 000508 | 0004F8 | 000503 | 0004F2 | 0004FB |
| 0004EA | 000509 | 0004EA | 0004F8 | 00050A | 0004F2 | 0004F1 | 0004F8 | 0004FF | 0004F8 | 000501 | 0004FF | 000506 | 0004FC | 0004ED | 000508 |
| 000442 | 0004E8 | 0004E7 | 0004F2 | 0004F5 | 000514 | 0004EE | 0004FF | 000503 | 000507 | 000513 | 0004F4 | 000507 | 0004F8 | 00050F | 000500 |
| 00050C | 00050B | 000503 | 000505 | 00050D | 0004FA | 00051A | 00050C | 000522 | 000516 | 000516 | 00050F | 00051A | 000503 | 00050D | 000476 |
| 000510 | 000548 | 000519 | 000529 | 000525 | 00051E | 00051D | 000534 | 00051E | 000514 | 000512 | 00050E | 000508 | 0004F8 | 0004EC | 0004E9 |
| 0004F4 | 00050D | 0004F2 | 0004F8 | 0004F6 | 0004EA | 0004F1 | 0004F8 | 000515 | 0004F5 | 00050A | 0004E8 | 0004F8 | 000503 | 0004FC | 000505 |
| 00043C | 0004F6 | 000509 | 000502 | 000591 | 0004F9 | 0004F7 | 0004FA | 000500 | 000510 | 0004F8 | 0004F7 | 00050C | 000509 | 000504 | 000504 |
| 000506 | 000505 | 00050C | 000515 | 000510 | 0004F9 | 000521 | 000528 | 000525 | 00051A | 00051C | 000507 | 000512 | 000502 | 0004EC | 000482 |
| 00051D | 000540 | 000535 | 000511 | 000544 | 00051C | 00050F | 000545 | 00050E | 00051A | 00051D | 000500 | 0004F1 | 000518 | 0004F0 | 0004E2 |
| 000500 | 0004F9 | 0004EC | 0004F8 | 0004E1 | 0004EF | 0004E6 | 0004EA | 0004F2 | 0004E5 | 0004FC | 000504 | 0004F5 | 0004F2 | 0004F9 | 000504 |
| 00043D | 0004F4 | 0004DD | 0004F5 | 0004E8 | 0004F7 | 0004F3 | 000500 | 0004EB | 00050E | 0004DD | 0004EC | 00050F | 000508 | 0004FF | 000504 |
| 0004EF | 000507 | 00050F | 000507 | 00050A | 000507 | 000504 | 000512 | 000515 | 0004F9 | 000518 | 000504 | 000513 | 0004FF | 0004E5 | 00046E |
| 00050F | 000522 | 000526 | 000518 | 00051A | 00050E | 000509 | 000531 | 000505 | 000513 | 000529 | 00050E | 000511 | 0004F9 | 0004E5 | 000507 |
| 0004E7 | 000511 | 0004EE | 0004F8 | 0004EA | 0004F2 | 0004F2 | 0004DF | 0004E1 | 0004DF | 0004E6 | 000503 | 0004FE | 0004F8 | 0004F8 | 0004E8 |
| 00044E | 0004F8 | 00050C | 0004F6 | 0004E6 | 0004DD | 000520 | 0004F1 | 0004F5 | 0004F2 | 0004D8 | 0004FF | 0004F5 | 000509 | 0004FF | 000509 |
| 0004F1 | 000517 | 00051A | 000510 | 0004F5 | 00051A | 000521 | 00051C | 000504 | 000510 | 000510 | 000510 | 0004F6 | 0004FE | 0004EF | 00045A |
| 000506 | 000533 | 000526 | 000512 | 000524 | 00050C | 00050C | 000521 | 000515 | 000509 | 000506 | 00051A | 0004F6 | 0004F4 | 0004F0 | 0004F5 |
| 0004D8 | 000534 | 0004F8 | 000507 | 000506 | 0004EA | 0004E7 | 0004F5 | 0004DC | 0004E6 | 0004EA | 000502 | 0004E6 | 0004F7 | 0004F5 | 0004FD |
| 000438 | 0004F4 | 0004FB | 0004E3 | 0004E7 | 0004FB | 0005D2 | 0004FA | 00051E | 0004FD | 0004F0 | 0004E5 | 0004F7 | 0004F3 | 00050B | 00050F |
| 000513 | 00051B | 0004F8 | 000511 | 000519 | 00050E | 00051A | 000523 | 000505 | 000523 | 000518 | 000519 | 000503 | 0004FA | 0004F6 | 000452 |
| 0004F7 | 00051C | 00050E | 000504 | 00051B | 000513 | 0004FA | 00050A | 000505 | 0004FE | 0004FE | 00050D | 0004EF | 0004FB | 000508 | 0004FE |
| 0004F8 | 000540 | 0004F6 | 0004E3 | 0004E8 | 000501 | 0004F2 | 0004DB | 0004E8 | 0004EF | 0004DE | 0004FF | 0004F2 | 0004F9 | 0004DD | 000502 |
| 000439 | 0004F9 | 0004EC | 0004FE | 0004E9 | 0004FA | 000500 | 0004FC | 0004F3 | 000505 | 000506 | 0004EB | 0004EF | 0004DD | 0004F8 | 0004FA |
| 000512 | 000507 | 00051F | 000505 | 000514 | 0004FC | 0004FB | 00050A | 000516 | 0004FA | 000501 | 0004F9 | 0004F7 | 0004FB | 0004DB | 000439 |
| 0004F9 | 000526 | 00051D | 000512 | 000503 | 000501 | 000502 | 0004F7 | 000508 | 000505 | 0004EA | 0004F5 | 0004F0 | 0004ED | 000500 | 0004DE |
| 0004EA | 0004FD | 000507 | 0004EB | 0004F5 | 0004FE | 0004EB | 0004E6 | 0004DD | 0004EF | 0004D9 | 0004EE | 0004EC | 0004EA | 0004F3 | 0004F3 |
| 000444 | 0004FB | 0004EE | 0004E6 | 000505 | 0004FD | 000501 | 000511 | 00050C | 000514 | 0004FB | 0004FE | 0004F2 | 000501 | 0004EB | 0004EA |
| 0004FE | 000502 | 0004F0 | 0004F4 | 0004F3 | 0004FD | 0004FD | 00050E | 000516 | 0004FA | 0004F7 | 0004FB | 0004EC | 0004EC | 0004E4 | 000462 |
| 0004FF | 000522 | 000526 | 000509 | 000500 | 000512 | 0004FD | 000507 | 000517 | 0004E7 | 0004F6 | 0004DD | 000502 | 0004F7 | 0004EC | 0004F2 |
| 0004FC | 00051E | 000505 | 0004F7 | 00050D | 0004F0 | 0004EF | 0004CF | 0004FA | 0004EE | 0004E2 | 0004E9 | 0004F2 | 0004FF | 0004E0 | 0004F3 |
| 00041B | 0004DD | 0004E7 | 00050D | 000500 | 000506 | 000511 | 000526 | 000515 | 000504 | 000506 | 000504 | 0004FD | 0004F9 | 0004F8 | 0004F4 |
| 000512 | 0004FD | 0004F2 | 0004E5 | 000515 | 000506 | 000501 | 0004F5 | 000509 | 0004FE | 0004E3 | 000500 | 0004FB | 000503 | 0004EF | 00044C |
| 000505 | 000521 | 000501 | 000512 | 0004F0 | 000509 | 000502 | 0004EC | 0004F6 | 0004F1 | 0004FB | 000513 | 0004EE | 0004E2 | 0004C7 | 0004E8 |
| 0004F3 | 000500 | 000556 | 0004F8 | 0004F | 0004EA | 0004EA | 0004EF | 0004E7 | 0004F1 | 00041A | 0004EE | 000506 | 0004DB | 0004EC | 0004E7 |
| 000450 | 0004E6 | 0004DF | 0004F9 | 0004FB | 0004FB | 0004FA | 000518 | 00050F | 000528 | 00050C | 000507 | 000503 | 0004FA | 0004F9 | 0004F9 |
| 0004F3 | 0004EA | 000506 | 0004F9 | 0004FA | 0004FD | 000507 | 000502 | 0004FA | 000514 | 0004EA | 0004FA | 00050C | 0004EF | 0004E8 | 000453 |
| 0004F3 | 0004FC | 000505 | 000509 | 0004F2 | 0004F5 | 0004EF | 0004E8 | 0004E1 | 0004F7 | 0004E3 | 00050D | 0004EC | 0004E8 | 0004D1 | 0004E3 |
| 0004E7 | 0004D7 | 0004DC | 0004E8 | 0004E7 | 0004DF | 0004D9 | 0004E8 | 0004CE | 0004D1 | 0004CF | 0004DB | 0004DA | 0004D1 | 0004E2 | 0004D1 |
| 000420 | 0004DD | 0004DC | 0004EB | 0004F3 | 0004EF | 0004FB | 00051D | 00050B | 000501 | 0004FD | 0004FA | 0004EB | 0004ED | 0004ED | 0004E5 |
| 0004EA | 0004EA | 0004EC | 0004EC | 0004E8 | 0004F3 | 0004F8 | 0004F5 | 0004EF | 0004DD | 0004F4 | 0004FA | 0004E6 | 0004E2 | 0004DB | 000374 |
| 0004E3 | 0004FB | 00050F | 00050F | 0004F0 | 0004F8 | 0004F2 | 0004E4 | 0004ED | 0004E3 | 0004E8 | 0004E3 | 0004D1 | 0004F1 | 0004DF | 0004CD |
| 0004CD | 0004F5 | 0004E4 | 0004EB | 0004D9 | 0004E6 | 0004D4 | 0004CF | 0004E9 | 0004DE | 0004CB | 0004D4 | 0004CF | 0004CB | 0004C7 | 0004D0 |
| 000416 | 0004C9 | 0004E2 | 0004DA | 000508 | 0004F7 | 000511 | 000504 | 00051D | 000538 | 000532 | 0004DD | 0004EA | 0004F5 | 0004E2 | 0004DB |
| 0004E8 | 0004DE | 0004E9 | 000500 | 0004D4 | 0004F8 | 0004EA | 0004FE | 0004E6 | 0004FA | 0004E8 | 0004EC | 0004DA | 0004EC | 0004D2 | 000450 |

DARK FINE MAPS

ORIGINAL PAGE 13
OF POOR QUALITY

TR81-84

CID TEMP ~ 160

T_r ~ 32 msec

T_i ~ 460 msec

| | | | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 00005D | 00005A | 00005B | 00005C | 00005E | 00005A | 00005E | 00005A | 00005A | 00005A | 00005A | 00005A |
| 000057 | 00005C | 00005A | 00005C | 000057 | 00005C | 000057 | 000057 | 00005C | 00005A | 00005C | 00005C |
| 00007F | 00007E | 00005D | 00005C | 00007B | 000051 | 00007B | 00005B | 00005D | 00007E | 00007E | 00007C |
| 00007A | 00007A | 00007B | 00005C | 000071 | 00005D | 00007A | 000072 | 00007A | 000077 | 00007C | 000080 |
| 00006F | 000073 | 000073 | 000071 | 000072 | 00005A | 000071 | 00007A | 00005B | 000071 | 00005D | 000077 |
| 00007C | 00006D | 00006F | 00007A | 00007C | 00007C | 00007C | 00007C | 00005F | 00006F | 00006C | 000070 |
| 000073 | 00006F | 00006C | 00006E | 00006F | 00007C | 00005C | 00007C | 00007C | 000071 | 00005D | 00007C |
| 00006B | 00006C | 00006A | 00006E | 00006F | 00006C | 00006E | 000071 | 00006F | 00006A | 00006F | 000071 |
| 00006D | 00006E | 00006B | 00006F | 000067 | 00007F | 00007C | 00006A | 00006C | 000071 | 00006E | 000072 |
| 00006A | 000072 | 00006C | 000072 | 00007C | 00006C | 00006B | 00006C | 00006A | 00006C | 00006B | 000070 |
| 000065 | 00006C | 00006A | 00007C | 00007C | 00006C | 00006C | 00007C | 00006A | 00006C | 00006C | 00006A |
| 00006C | 00006F | 00006C | 000072 | 00006C | 00006D | 000067 | 00006B | 00006C | 00006C | 00006A | 00006B |

LOCATION 20 20

| | | | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0000CF | 0000CD | 0000CD | 0000CF | 0000AC | 0000AD | 0000AB | 0000B0 | 00009E | 00009C | 00009C | 000097 |
| 000092 | 000095 | 00009A | 000091 | 0000B5 | 0000B5 | 0000B8 | 0000B9 | 0000B7 | 0000B8 | 0000B3 | 0000B0 |
| 0000B3 | 0000B4 | 0000B4 | 0000B2 | 00007E | 00007D | 0000B4 | 0000B6 | 00007C | 00007C | 000079 | 0000B0 |
| 00007C | 00007E | 00007C | 0000B1 | 00007D | 0000B2 | 0000B1 | 00007E | 00007F | 00007A | 00007C | 00007B |
| 000073 | 000075 | 00007D | 00007D | 00007A | 000072 | 000072 | 00007D | 00006D | 00007A | 00006D | 00006E |
| 000075 | 000069 | 000072 | 000073 | 00006F | 000065 | 00006B | 000072 | 00006F | 00007C | 000069 | 00006D |
| 000073 | 00006F | 00006F | 00007A | 000071 | 000072 | 00006F | 00007D | 00006C | 00007F | 000072 | 00006F |
| 00007A | 000072 | 000071 | 000072 | 00006D | 00007A | 00006F | 00007A | 000071 | 00007D | 000069 | 000070 |
| 00006D | 000072 | 00006D | 00007C | 00006E | 000067 | 00006B | 00006F | 00006E | 00006C | 00006C | 000073 |
| 00006B | 00006B | 000065 | 00007C | 00006E | 00007D | 00006D | 00007D | 00006A | 00006B | 000065 | 00006E |
| 00006A | 00006D | 00006E | 00006C | 00006F | 00006C | 00006B | 000071 | 000067 | 00006F | 00007D | 00006A |
| 00006F | 00006F | 00007D | 00006D | 00007D | 00006B | 00006C | 00006F | 00006C | 00007D | 00006F | 00007D |

LOCATION 15 15

| | | | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0000E0 | 0000E2 | 0000E0 | 0000E3 | 0000AD | 0000B4 | 0000B1 | 0000B7 | 0000AD | 0000A2 | 00009C | 00009F |
| 000092 | 000093 | 000093 | 00009B | 00009D | 00009D | 000091 | 00009A | 0000B6 | 0000B7 | 0000B6 | 0000B0 |
| 0000B3 | 0000B5 | 0000B5 | 0000B5 | 0000B2 | 0000B2 | 0000B4 | 0000B7 | 0000B6 | 0000B7 | 00007E | 0000B5 |
| 00007B | 00007E | 00007D | 00007B | 0000B0 | 00007C | 00007A | 0000B1 | 00007A | 0000B5 | 0000B0 | 00007F |
| 00007D | 00006E | 000073 | 00007B | 00006E | 000071 | 00006E | 000076 | 0000B0 | 00007A | 000071 | 000077 |
| 00007D | 00007D | 000073 | 00007A | 00006E | 00006E | 000072 | 00006F | 000072 | 00007A | 00007A | 000075 |
| 00006B | 00006D | 000071 | 00007A | 000072 | 00007D | 00006B | 000076 | 00006B | 00006E | 00006F | 00006B |
| 00006E | 000071 | 00006B | 000073 | 00007D | 00006B | 000072 | 00007D | 00006F | 00007D | 00006A | 000075 |
| 00006B | 00006F | 000073 | 000075 | 000065 | 00006B | 00006A | 00006D | 00006B | 00006B | 00006D | 00006F |
| 000071 | 00006A | 00006D | 000075 | 00006A | 00007A | 00006C | 00007D | 00006E | 000073 | 00006A | 00006F |
| 00007D | 00006C | 00007D | 000072 | 00007D | 00006E | 000071 | 000071 | 000072 | 00006D | 00006C | 00007A |
| 00006B | 000069 | 00006A | 00006D | 00006B | 00006B | 00006F | 00006E | 00006F | 00006B | 000071 | 00007A |

LOCATION 10 10

TR81-44

CID TEMP $\sim 0^{\circ}\text{C}$
 $T_r \sim 32 \text{ msec}$
 $T_i \sim 460 \text{ msec}$

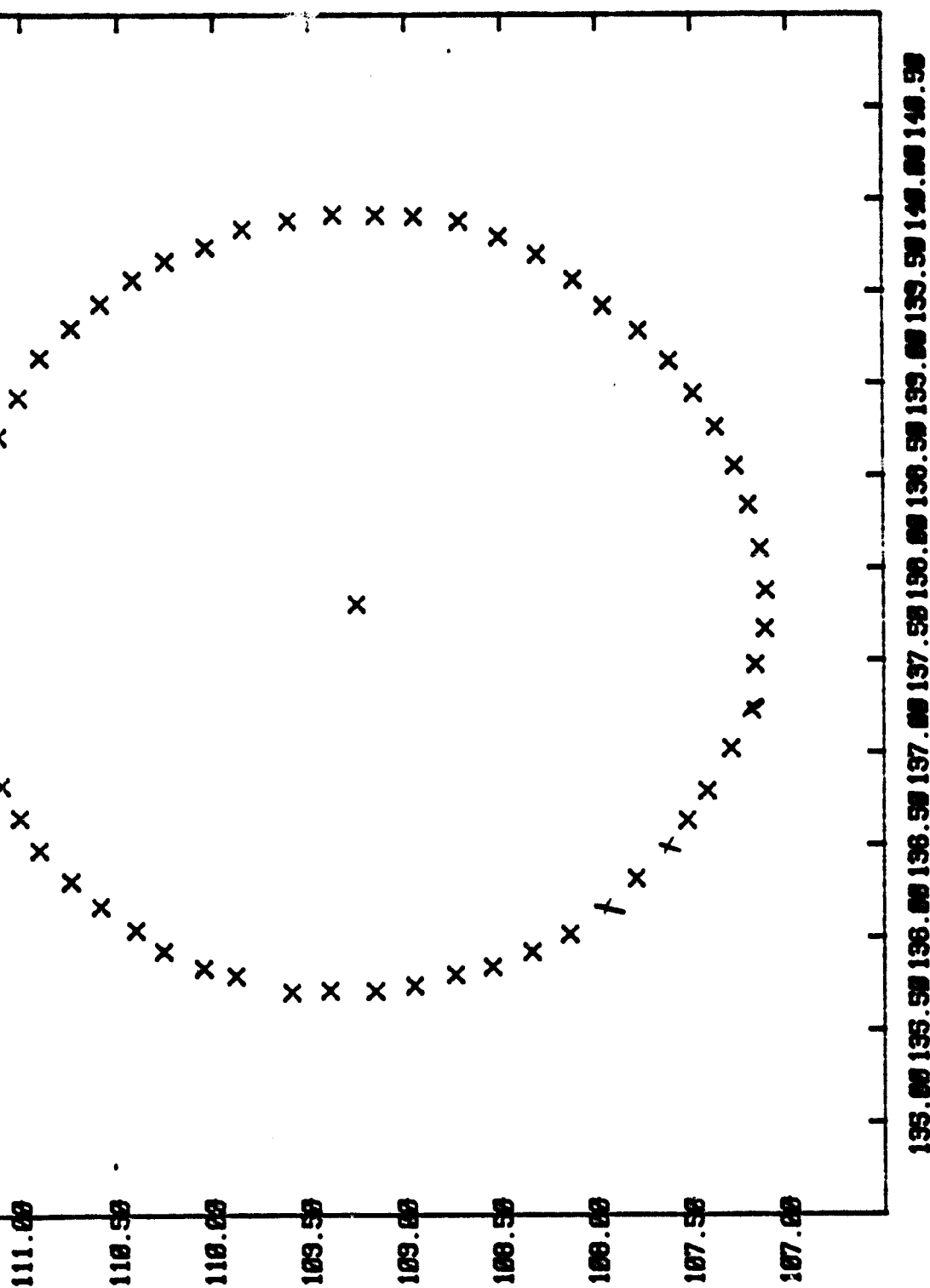
LOCATION 20 20

LOCATION IS IS

LOCATION 10 10

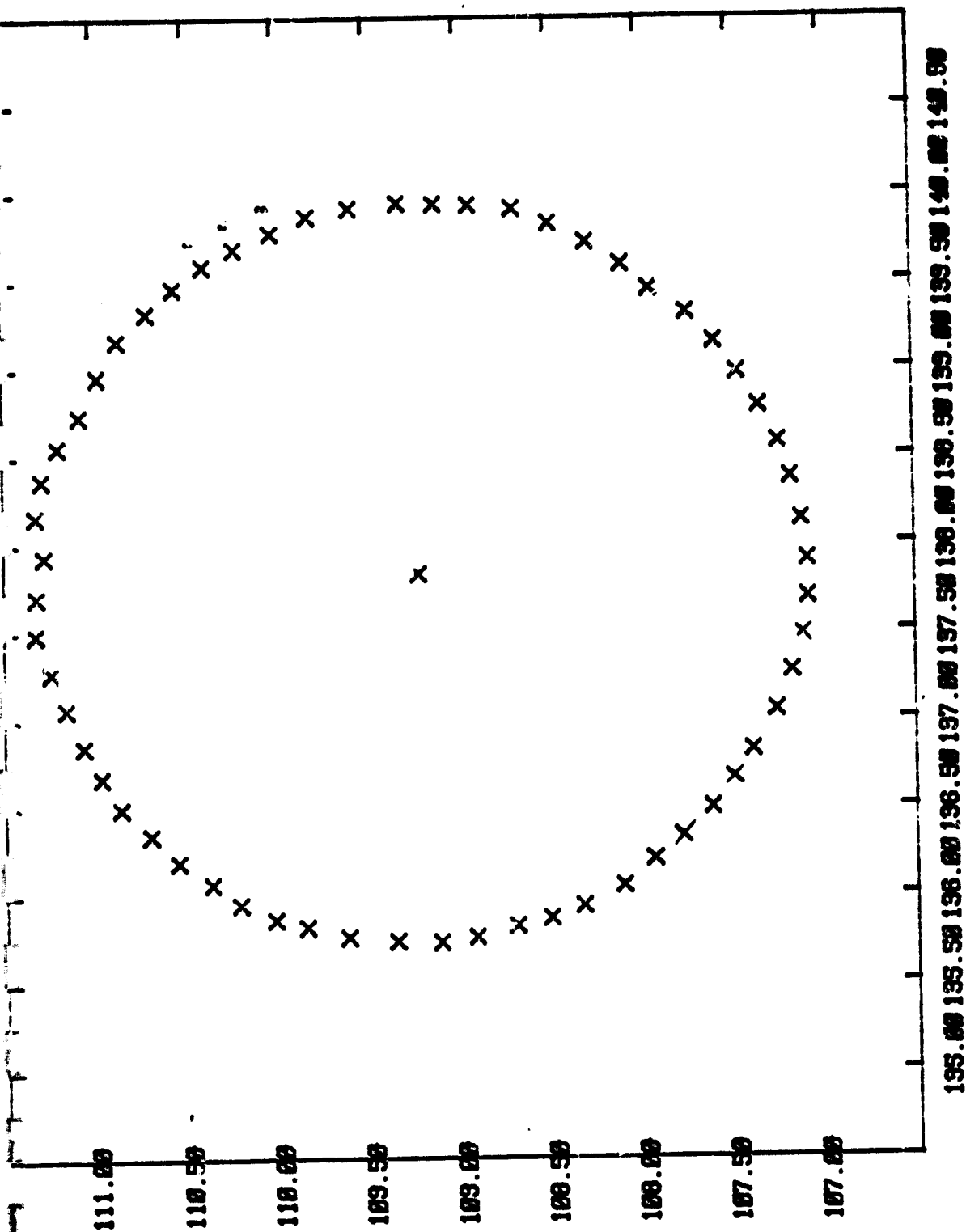
SMALL FIELD POINTING ACCURACY

- POSITION # 1 : 0°C (1.0, 2.8, 6.0 Mv)
 : 10°C (1.0, 2.8, 6.0 Mv)
 : 20°C (1.0, 2.8, 6.0 Mv)
- POSITION # 2 : 0°C (1.0, 2.8, 6.0 Mv)
 : 10°C (1.0, 2.8, 6.0 Mv)
 : 20°C (1.0, 2.8, 6.0 Mv)
- POSITION # 3 : 0°C (1.0, 2.8, 6.0 Mv)
 : 10°C (1.0, 2.8 Mv)
 : 20°C (1.0, 2.8 Mv)
- POSITION # 4 : 0°C (1.0, 2.8, 6.0 Mv)
 : 10°C (1.0, 2.8, 6.0 Mv)
 : 20°C (1.0, 2.8, 6.0 Mv)
- CENTER : 0°C (1.0, 2.8, 6.0 Mv)
 : 10°C (1.0, 2.8, 6.0 Mv)
 : 20°C (1.0, 2.8, 6.0 Mv)



POSITION #1 S.D=1.747%

12-A-00 F2.8 +1.0M 2 K=.347.275.408.298 100% 0°C.

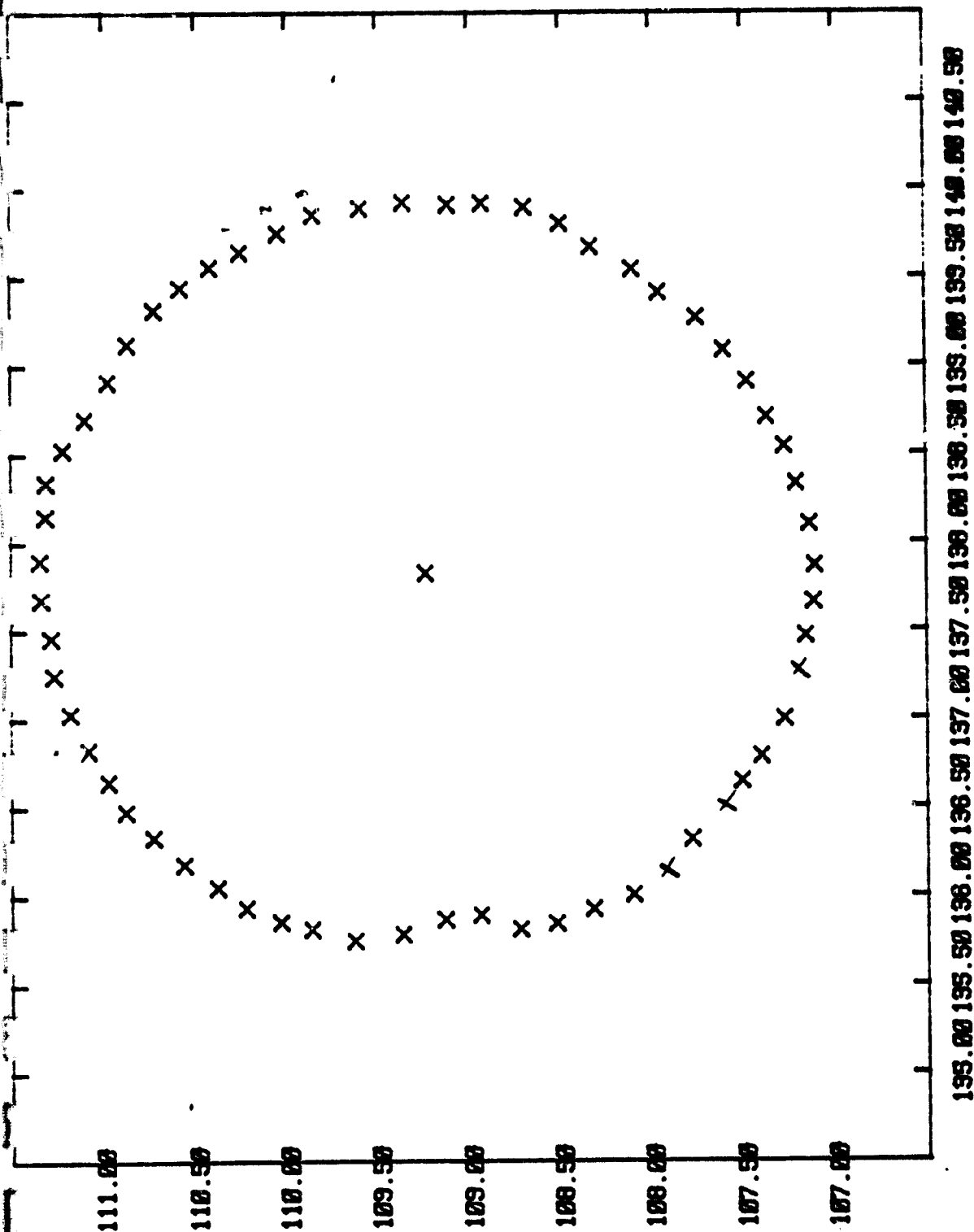


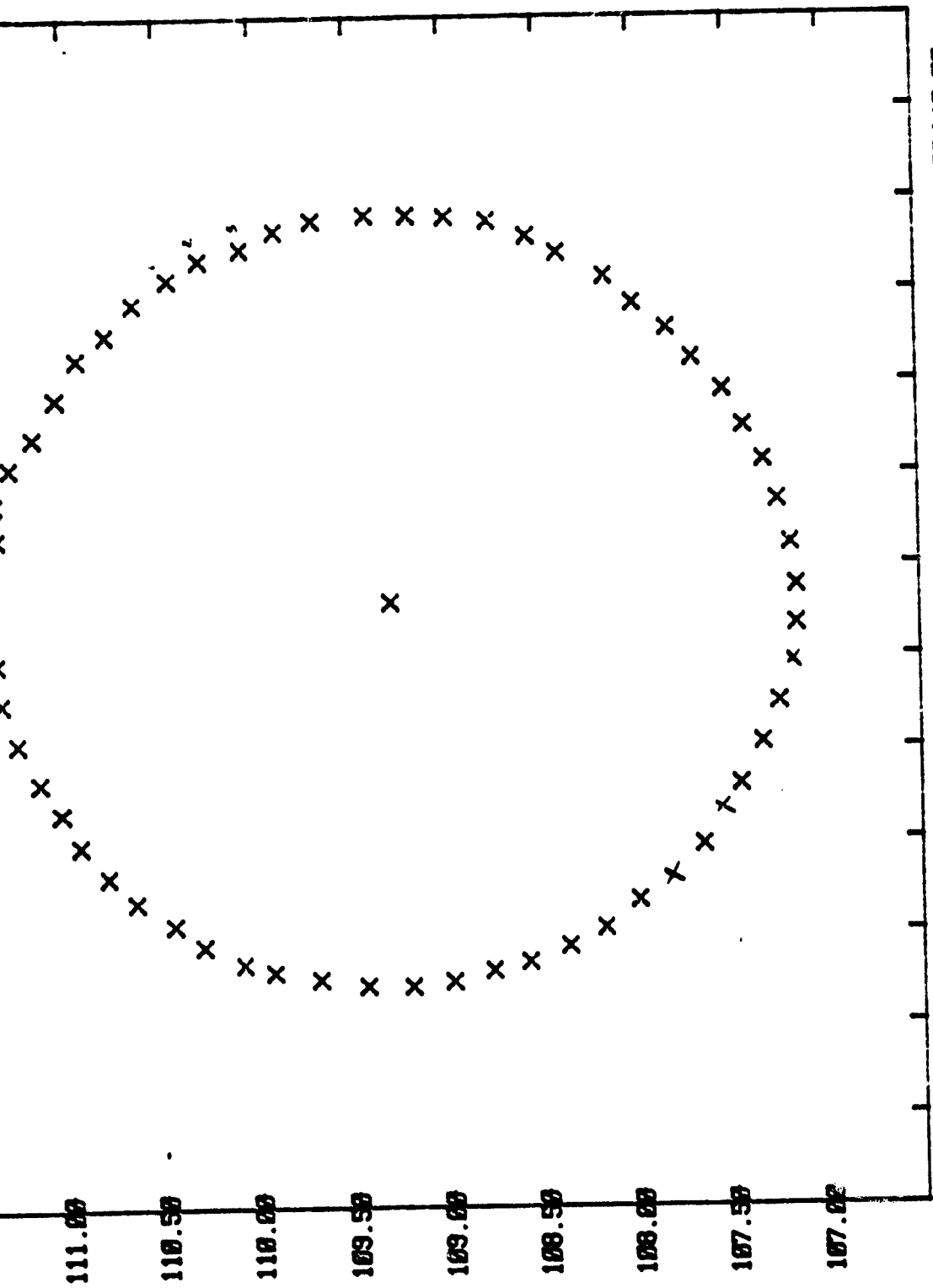
POSITION #1 S.D= 1.716%

12-B-10 F2.8 +1.0M 2 K=.347.275.408.298 10% 0°C

POSITION #1 S.D.= 2.948%

12-B-11 F2.8 +1.0M 2 K=.347.275.408.298 <1% 0°C





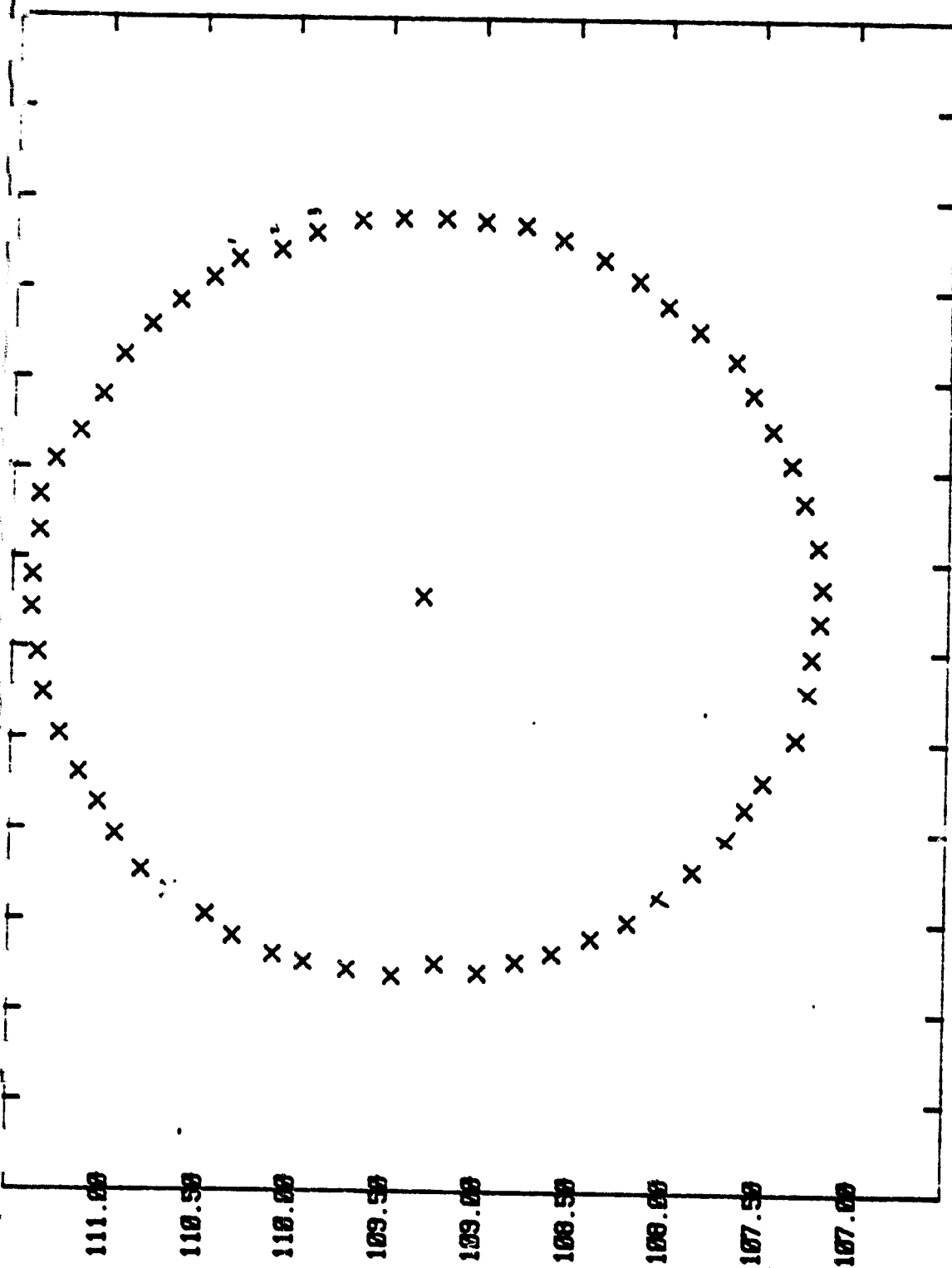
135.00 135.50 136.00 136.50 137.00 137.50 138.00 138.50 139.00 139.50 140.00 140.50

POSITION #1 S.D= 1.721%

1181-04

12-A-03 F2.8 +1.0M 2 K=.347.275.408.298 100% 10°C

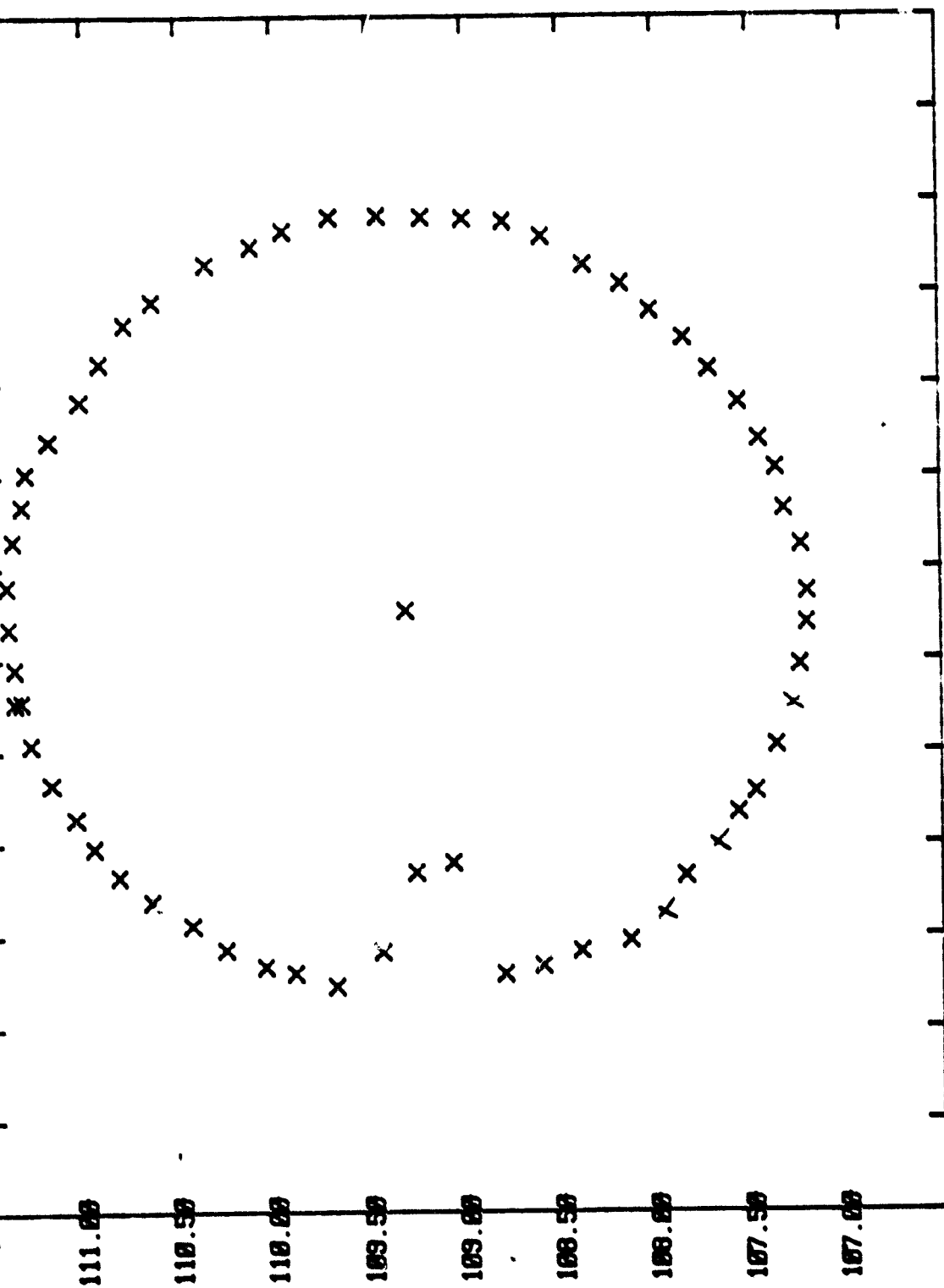
TR81-04



135.00 135.50 136.00 136.50 137.00 137.50 138.00 138.50 139.00 139.50 140.00 140.50 141.00 141.50 142.00 142.50 143.00 143.50 144.00 144.50 145.00

POSITION #1 S.D= 1.871 %

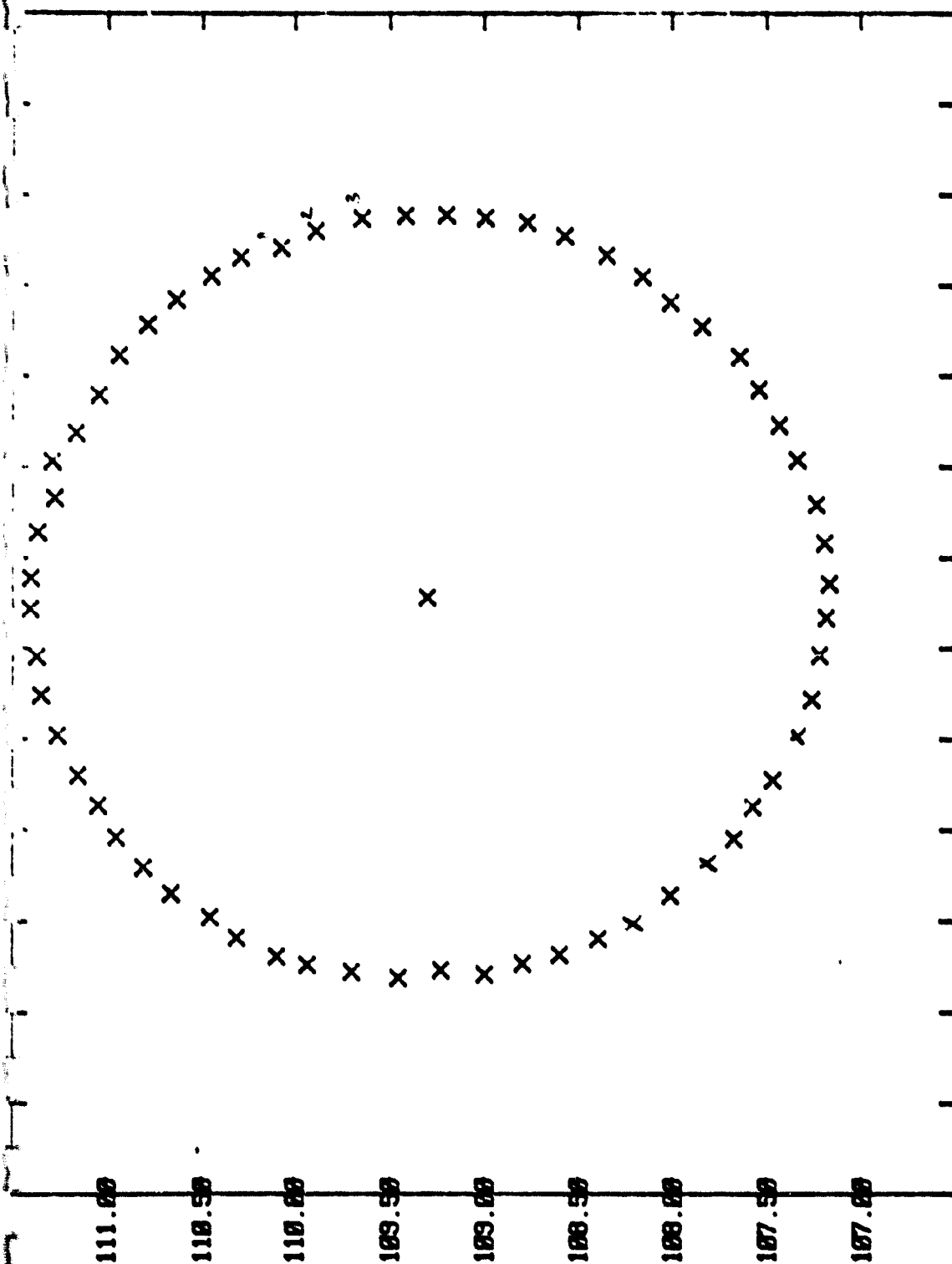
12-A-01 F2.8 +1.0M 2 K=.347.275.408.298 10% 10°C



135.00 135.50 136.00 136.50 137.00 137.50 138.00 138.50 139.00 139.50 140.00 140.50

POSITION #1 S.D= 2.603 %

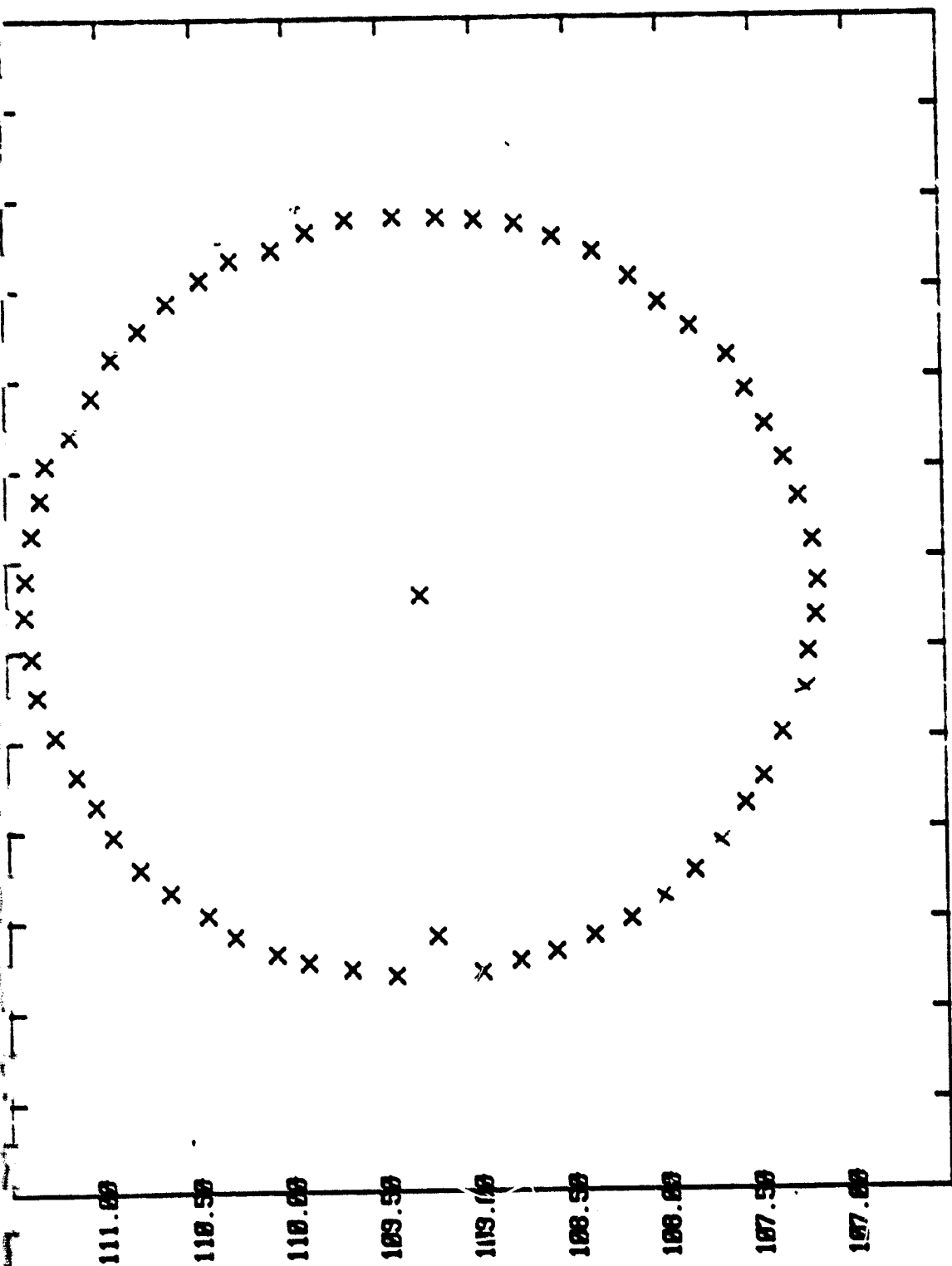
12-A-02 F2.8 +1.0M 2 K=.347.275.408.298 <1% 10° C



135.00 135.50 136.00 136.50 137.00 137.50 138.00 138.50 139.00 139.50 140.00 140.50

POSITION #1 S.D= 1.71%

12-A-07 F2.8 +1.0M 2 K=.347.275.408.298 100% 20°C

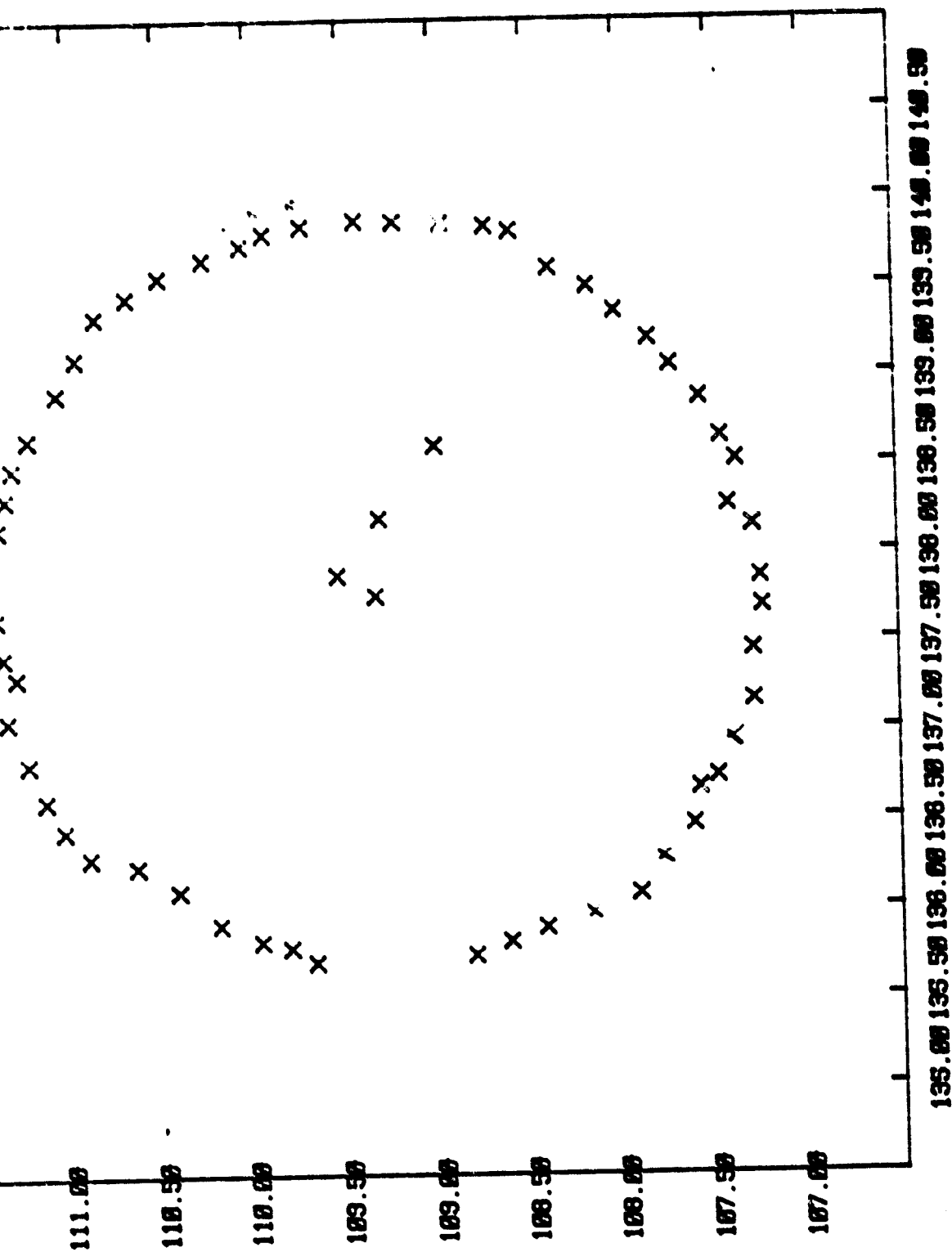


135.00 135.50 136.00 136.50 137.00 137.50 138.00 138.50 139.00 139.50 140.00 140.50

POSITION #1 S.D= 3.197 %

T581-04

12-A-05 F2.8 +1.0M 2 K=.347.275.408.298 10% 20°C



POSITION #1 S.D= 4.541%

12-A-06 F2.8 +1.0M 2 K=.347.275.408.298 <1% 20°C.

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 16.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .34700 | .27500 | .40800 | .29800 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference X Y | position X Y | standard deviation X Y |
|------|--------|-----------------|--------------|------------------|-------------------|---------------------------|
| .335 | 1.806 | .6948E+05 | 1.099 | 139.5 110.0 | 139.6422 110.2473 | .6346E-03 .2245E-02 |
| .352 | 8.178 | .7959E+05 | 1.147 | 140.0 110.0 | 139.7406 110.0392 | .1429E-02 .9773E-03 |
| .347 | 14.372 | .8142E+05 | 1.134 | 140.0 110.0 | 139.8385 109.8477 | .7037E-03 .1578E-02 |
| .403 | 20.706 | .6966E+05 | 1.009 | 140.0 109.5 | 139.8852 109.6119 | .8536E-03 .8145E-03 |
| .352 | 26.947 | .6101E+05 | 1.037 | 140.0 109.5 | 139.9153 109.3721 | .1084E-02 .6525E-03 |
| .408 | 33.236 | .5143E+05 | 1.199 | 140.0 109.0 | 139.9131 109.1529 | .1495E-02 .6332E-03 |
| .355 | 39.512 | .5212E+05 | 1.179 | 140.0 109.0 | 139.9067 108.9545 | .1999E-02 .1255E-02 |
| .383 | 45.790 | .5260E+05 | 1.133 | 140.0 109.0 | 139.8795 108.7185 | .2065E-02 .1203E-02 |
| .383 | 52.081 | .6455E+05 | .999 | 140.0 108.5 | 139.7959 108.5105 | .1325E-02 .1302E-02 |
| .434 | 58.373 | .9211E+05 | 1.238 | 140.0 108.0 | 139.6992 108.3108 | .1640E-02 .9288E-03 |
| .408 | 64.574 | .8607E+05 | 1.159 | 139.5 108.0 | 139.5627 108.1170 | .8652E-03 .1314E-02 |
| .411 | 70.870 | .8942E+05 | 1.138 | 139.5 108.0 | 139.4204 107.9650 | .6777E-03 .1413E-02 |
| .403 | 1.816 | .1054E+06 | 1.204 | 139.0 108.0 | 139.2852 107.7797 | .9091E-03 .2292E-02 |
| .299 | 8.171 | .1007E+06 | 1.022 | 139.0 107.5 | 139.1205 107.6187 | .1268E-02 .1109E-02 |
| .313 | 14.370 | .1011E+06 | 1.010 | 139.0 107.5 | 138.9453 107.4879 | .3944E-03 .1523E-02 |
| .260 | 20.722 | .1023E+06 | 1.253 | 139.0 107.0 | 138.7635 107.3771 | .1299E-02 .1993E-02 |
| .321 | 26.966 | .8889E+05 | 1.164 | 138.5 107.0 | 138.5512 107.2760 | .7326E-03 .1540E-02 |
| .299 | 33.235 | .8346E+05 | 1.166 | 138.5 107.0 | 138.3360 107.2065 | .1040E-02 .1326E-02 |
| .299 | 39.535 | .8449E+05 | 1.190 | 138.0 107.0 | 138.1015 107.1459 | .5468E-03 .1832E-02 |
| .327 | 45.788 | .8708E+05 | 1.204 | 138.0 107.0 | 137.8756 107.1178 | .1290E-02 .6334E-03 |
| .321 | 52.098 | .9240E+05 | 1.243 | 138.0 107.0 | 137.6670 107.1201 | .2028E-02 .3130E-02 |
| .293 | 58.327 | .8182E+05 | 1.147 | 137.5 107.0 | 137.4761 107.1690 | .1229E-02 .5860E-03 |
| .304 | 64.624 | .8298E+05 | 1.192 | 137.0 107.0 | 137.2380 107.2157 | .7109E-03 .1225E-02 |
| .330 | 70.855 | .8907E+05 | 1.183 | 137.0 107.0 | 137.0217 107.2987 | .1009E-02 .8350E-03 |
| .332 | 1.808 | .9623E+05 | 1.025 | 137.0 107.5 | 136.7944 107.4249 | .6801E-03 .1224E-02 |
| .271 | 8.168 | .9057E+05 | .966 | 136.5 107.5 | 136.6331 107.5257 | .1284E-02 .7566E-03 |
| .369 | 14.361 | .1442E+06 | 1.205 | 136.5 108.0 | 136.4933 107.4759 | .6562E-01 .2974E+00 |
| .425 | 20.736 | .1020E+06 | 1.245 | 136.0 108.0 | 136.3197 107.7963 | .5107E-03 .8916E-03 |
| .422 | 26.963 | .9979E+05 | 1.185 | 136.0 108.0 | 136.1757 107.9705 | .5512E-03 .1409E-02 |
| .417 | 33.254 | .9398E+05 | 1.188 | 136.0 108.0 | 136.0185 108.1437 | .1623E-02 .2067E-02 |
| .363 | 39.543 | .6799E+05 | 1.053 | 136.0 108.5 | 135.9225 108.3436 | .7954E-03 .1372E-02 |
| .347 | 45.791 | .6663E+05 | .991 | 136.0 108.5 | 135.8402 108.5476 | .8630E-03 .8593E-03 |
| .304 | 52.076 | .5663E+05 | 1.139 | 136.0 109.0 | 135.7380 108.7407 | .6391E-03 .1578E-02 |
| .318 | 58.289 | .5497E+05 | 1.175 | 136.0 109.0 | 135.7386 108.9581 | .3113E-02 .1494E-02 |
| .341 | 64.617 | .5804E+05 | 1.197 | 136.0 109.0 | 135.7099 109.1606 | .6309E-03 .1667E-02 |

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| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .302 | 70.17 | .7324E+05 | 1.107 | 136.0 | 110.0 | 135.6401 | 109.5202 | .2184E+00 | .7592E+00 |
| .318 | 1.827 | .1324E+06 | 1.181 | 136.0 | 110.0 | 135.6401 | 109.5202 | .2184E+00 | .7592E+00 |
| .316 | 8.185 | .7952E+05 | 1.152 | 136.0 | 110.0 | 135.7913 | 109.8481 | .1430E-02 | .7874E-03 |
| .352 | 14.306 | .7739E+05 | 1.174 | 136.0 | 110.0 | 135.8429 | 110.0562 | .1233E-02 | .7771E-03 |
| .310 | 20.754 | .7682E+05 | 1.152 | 136.0 | 110.0 | 135.9279 | 110.2605 | .1233E-02 | .7771E-03 |
| .282 | 27.004 | .4587E+05 | .923 | 136.0 | 110.5 | 136.0419 | 110.4071 | .1549E-02 | .1351E-02 |
| .327 | 33.279 | .5252E+05 | .933 | 136.0 | 110.5 | 136.1720 | 110.5965 | .9911E-03 | .7315E-02 |
| .274 | 39.540 | .6147E+05 | 1.146 | 136.0 | 111.0 | 136.3055 | 110.7459 | .8704E | .1730E-02 |
| .288 | 45.832 | .7184E+05 | 1.067 | 136.5 | 111.0 | 136.4740 | 110.9052 | .9205E | .1631E-02 |
| .285 | 52.098 | .7712E+05 | 1.069 | 136.5 | 111.0 | 136.6491 | 111.0035 | .5616E-03 | .1249E-02 |
| .338 | 58.381 | .8792E+05 | 1.154 | 137.0 | 111.0 | 136.8267 | 111.1027 | .1462E-02 | .2094E-02 |
| .330 | 64.638 | .8684E+05 | 1.136 | 137.0 | 111.0 | 137.0395 | 111.2088 | .1427E-02 | .2523E-02 |
| .304 | 70.893 | .8564E+05 | 1.142 | 137.0 | 111.0 | 137.2541 | 111.2922 | .4718E-03 | .6250E-03 |
| .332 | 1.827 | .8767E+05 | 1.105 | 137.5 | 111.0 | 137.4706 | 111.3673 | .1190E-02 | .1154E-02 |
| .288 | 8.184 | .9820E+05 | 1.063 | 138.0 | 111.5 | 137.6825 | 111.3550 | .9423E-03 | .1310E-02 |
| .260 | 14.386 | .9324E+05 | 1.035 | 138.0 | 111.5 | 137.9075 | 111.3533 | .1442E-02 | .2494E-02 |
| .262 | 20.752 | .8944E+05 | 1.123 | 138.0 | 111.0 | 138.1468 | 111.3590 | .1111E-02 | .1680E-02 |
| .310 | 26.986 | .8506E+05 | 1.112 | 138.5 | 111.0 | 138.3423 | 111.3291 | .9717E-03 | .1767E-02 |
| .327 | 33.265 | .8310E+05 | 1.097 | 138.5 | 111.0 | 138.5389 | 111.2436 | .1023E-02 | .1851E-02 |
| .296 | 39.552 | .9170E+05 | 1.149 | 139.0 | 111.0 | 138.7150 | 111.1207 | .1243E-02 | .9235E-03 |
| .243 | 45.821 | .8400E+05 | 1.111 | 139.0 | 111.0 | 138.9258 | 111.0126 | .7061E-03 | .5624E-03 |
| .276 | 52.069 | .7626E+05 | 1.089 | 139.0 | 111.0 | 139.1413 | 110.9025 | .1229E-02 | .1174E-02 |
| .226 | 58.420 | .6274E+05 | 1.123 | 139.0 | 111.0 | 139.3011 | 110.7414 | .1065E-02 | .2224E-02 |
| .276 | 64.623 | .4873E+05 | .918 | 139.5 | 110.5 | 139.4330 | 110.5913 | .5890E-03 | .1088E-02 |
| .276 | 70.862 | .4235E+05 | .903 | 139.5 | 110.5 | 139.5607 | 110.4203 | .4320E-03 | .8982E-03 |

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| | 1 | 2 | delta r1 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.00458 | -.02192 | .00778 | .00016 | .00311 | .00011 |
| 1 | .01254 | .03219 | .01421 | .00588 | -.01672 | .04345 |
| 2 | -.02091 | -.01123 | -.00769 | -.00243 | .00418 | .00533 |
| 3 | .01906 | .02755 | .02861 | .00094 | .00588 | .00341 |
| 4 | -.02012 | -.02169 | .00974 | -.02879 | -.03586 | -.00657 |
| 5 | -.01896 | -.02221 | -.03855 | -.02269 | -.01236 | -.01331 |
| 6 | .07084 | .00025 | .01756 | .01932 | -.00394 | .00329 |
| 7 | .00449 | .01011 | -.01399 | -.01928 | -.01158 | .00043 |
| 8 | .02862 | -.00641 | -.00921 | .02155 | .03252 | .00262 |
| 9 | -.03426 | -.02558 | .01113 | -.00116 | -.00399 | -.00301 |

x0= 137.8051 r0= 109.2546 r0= 2.11033780 std.dev.= .02334398

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 2 | 1 | 5 | 12 | 15 | 25 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta r1 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.00716 | -.02445 | .00534 | -.00209 | .00111 | -.00160 |
| 1 | .01114 | .03120 | .01437 | .00582 | -.01624 | -.04245 |
| 2 | -.01931 | -.00902 | -.00488 | .00096 | .00621 | .01001 |
| 3 | .02431 | .03340 | .03491 | .00767 | .01310 | .00423 |
| 4 | -.01206 | -.01338 | | -.02007 | -.02700 | .00285 |
| 5 | -.01005 | -.01337 | -.02982 | -.01415 | -.00404 | -.00531 |
| 6 | | .00738 | .02433 | .02560 | .00191 | .00357 |
| 7 | .00926 | .01426 | -.01038 | -.01623 | -.00918 | .00221 |
| 8 | .02981 | -.00574 | -.00908 | .02115 | .03172 | .00342 |
| 9 | -.03581 | -.02748 | .00896 | -.00353 | -.00648 | -.00557 |

x0= 137.8101 y0= 109.2574 r0= 2.10721636 std.dev.= .01744137

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 5 | 10 | 14 | 28 | 2 |

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| | Coarse 1.0 | Fine 1.0 | Track 64.0 |
|----------------------|---------------|-------------|---------------|
| NR001 | | | |
| Interpolation delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .2757E+06 | .9190E+05 | .7352E+06 |

| | .34700 | .27500 | .40800 | .29800 |
|----------------|---------|---------|---------|---------|
| Constants: | | | | |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .170 | 70.866 | .9088E+04 | 2.717 | 139.5 | 110.5 | 139.5850 | 110.3967 | .1051E-02 | .7377E-03 |
| .178 | 1.806 | .1587E+05 | 2.898 | 139.5 | 110.0 | 139.6836 | 110.2171 | .1119E-02 | .1072E-02 |
| .223 | 8.193 | .1853E+05 | 2.928 | 140.0 | 110.0 | 139.7716 | 110.0133 | .1193E-02 | .9443E-03 |
| .209 | 14.366 | .1924E+05 | 2.929 | 140.0 | 110.0 | 139.8685 | 109.8187 | .7842E-03 | .7446E-03 |
| .184 | 20.721 | .1565E+05 | 2.802 | 140.0 | 109.5 | 139.9130 | 109.5821 | .1014E-02 | .7351E-03 |
| .142 | 26.962 | .1383E+05 | 2.873 | 140.0 | 109.0 | 139.9422 | 109.3479 | .1525E-02 | .5822E-02 |
| .187 | 33.254 | .1189E+05 | 2.976 | 140.0 | 109.0 | 139.9347 | 109.1216 | .1406E-02 | .1020E-02 |
| .201 | 39.542 | .1211E+05 | 2.956 | 140.0 | 109.0 | 139.9302 | 108.9766 | .1413E-02 | .1175E-02 |
| .223 | 45.812 | .1200E+05 | 2.917 | 140.0 | 109.0 | 139.9060 | 108.6870 | .7442E-03 | .4907E-03 |
| .282 | 52.091 | .1395E+05 | 2.796 | 140.0 | 108.5 | 139.8203 | 108.4882 | .8684E-03 | .4150E-03 |
| .279 | 58.367 | .2067E+05 | 3.027 | 140.0 | 108.0 | 139.7153 | 108.2821 | .7271E-03 | .9076E-03 |
| .274 | 64.626 | .1919E+05 | 2.952 | 139.5 | 108.0 | 139.5864 | 108.0893 | .4458E-03 | .1480E-02 |
| .220 | 70.888 | .2013E+05 | 2.927 | 139.5 | 108.0 | 139.4477 | 107.9382 | .1207E-02 | .5792E-03 |
| .268 | 1.830 | .2318E+05 | 3.004 | 139.0 | 108.0 | 139.3114 | 107.7379 | .9095E-03 | .1212E-02 |
| .086 | 8.195 | .2094E+05 | 2.810 | 139.0 | 107.5 | 139.1421 | 107.5864 | .8175E-03 | .1224E-02 |
| .144 | 14.349 | .2091E+05 | 2.805 | 139.0 | 107.5 | 138.9661 | 107.4610 | .5248E-03 | .1150E-02 |
| .184 | 20.722 | .2133E+05 | 3.029 | 139.0 | 107.0 | 138.7745 | 107.3441 | .7296E-03 | .1338E-02 |
| .170 | 26.951 | .1841E+05 | 2.953 | 138.5 | 107.0 | 138.5720 | 107.2423 | .1129E-02 | .1136E-02 |
| .175 | 33.260 | .1771E+05 | 2.955 | 138.5 | 107.0 | 138.3652 | 107.1764 | .5538E-03 | .2443E-03 |
| .144 | 39.529 | .1792E+05 | 2.964 | 138.0 | 107.0 | 138.1283 | 107.1194 | .6490E-03 | .5248E-03 |
| .111 | 45.826 | .1867E+05 | 2.971 | 138.0 | 107.0 | 137.8975 | 107.0903 | .7340E-03 | .1922E-02 |
| .173 | 52.090 | .1976E+05 | 3.005 | 138.0 | 107.0 | 137.6831 | 107.0906 | .4114E-03 | .9679E-03 |
| .178 | 58.361 | .1734E+05 | 2.932 | 137.5 | 107.0 | 137.5005 | 107.1371 | .9458E-03 | .3652E-03 |
| .170 | 64.604 | .1778E+05 | 2.982 | 137.0 | 107.0 | 137.2652 | 107.1804 | .6483E-03 | .1505E-02 |
| .100 | 70.877 | .1893E+05 | 2.962 | 137.0 | 107.0 | 137.0445 | 107.2677 | .8562E-03 | .2104E-02 |
| .074 | 1.830 | .2026E+05 | 2.834 | 137.0 | 107.5 | 136.8205 | 107.3977 | .1669E-02 | .1297E-02 |
| .136 | 8.182 | .1900E+05 | 2.770 | 136.5 | 107.5 | 136.6574 | 107.5034 | .6476E-03 | .1250E-02 |
| .201 | 14.388 | .1893E+05 | 2.821 | 136.5 | 107.5 | 136.4890 | 107.6241 | .8489E-03 | .9192E-03 |
| .344 | 20.726 | .2042E+05 | 2.949 | 136.5 | 108.0 | 136.3342 | 107.7668 | .2814E-03 | .1122E-02 |
| .321 | 26.969 | .2219E+05 | 2.974 | 136.0 | 108.0 | 136.2022 | 107.9409 | .5945E-03 | .1451E-02 |
| .271 | 33.247 | .2114E+05 | 2.970 | 136.0 | 108.0 | 136.0484 | 108.1106 | .7802E-03 | .1294E-02 |
| .290 | 39.544 | .1990E+05 | 2.956 | 136.0 | 108.0 | 135.9230 | 108.3368 | .9574E-03 | .1844E-02 |
| .285 | 45.823 | .1407E+05 | 2.783 | 136.0 | 108.5 | 135.8639 | 108.5169 | .5274E-03 | .7638E-03 |
| .313 | 52.092 | .1267E+05 | 2.919 | 136.0 | 109.0 | 135.8130 | 108.7036 | .1000E-02 | .1189E-02 |
| .310 | 58.380 | .1300E+05 | 2.955 | 136.0 | 109.0 | 135.7589 | 108.9171 | .4489E-03 | .9414E-03 |

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OF POOR QUALITY

| | | | | | | | | | |
|------|--------|-----------|-------|-------|---------|----------|----------|-----------|-----------|
| .316 | 70.670 | .1753E+05 | 2.844 | 136.0 | 109.5 | 135.7572 | 109.3594 | .1753E-02 | .1653E-02 |
| .330 | 1.844 | .1665E+05 | 2.807 | 136.0 | 109.5 | 135.7582 | 109.6298 | .4575E-03 | .2074E-03 |
| .318 | 8.127 | .1885E+05 | 2.938 | 136.0 | 110.0 | 135.8193 | 109.8563 | .1134E-02 | .1110E-02 |
| .265 | 14.389 | .1906E+05 | 2.962 | 136.0 | 110.0 | 135.8614 | 110.0301 | .1891E-02 | .1159E-02 |
| .220 | 20.750 | .1838E+05 | 2.947 | 136.0 | 110.0 | 135.9465 | 110.2214 | .1675E-02 | .1688E-02 |
| .223 | 26.977 | .1040E+05 | 2.733 | 136.0 | 110.5 | 136.0640 | 110.3764 | .1714E-02 | .2451E-03 |
| .260 | 33.251 | .1149E+05 | 2.724 | 136.0 | 110.5 | 136.1917 | 110.5613 | .1675E-02 | .2579E-03 |
| .251 | 39.535 | .1269E+05 | 2.842 | 136.5 | 111.0 | 136.3434 | 110.7091 | .2654E-03 | .1091E-03 |
| .220 | 45.902 | .1484E+05 | 2.852 | 136.5 | 111.0 | 136.4972 | 110.8681 | .6451E-03 | .2024E-03 |
| .192 | 52.100 | .1623E+05 | 2.861 | 136.5 | 111.0 | 136.6721 | 110.9720 | .1202E-02 | .4993E-03 |
| .206 | 58.362 | .1840E+05 | 2.934 | 137.0 | 111.0 | 136.8504 | 111.0695 | .1932E-02 | .6557E-03 |
| .125 | 64.628 | .1817E+05 | 2.919 | 137.0 | 111.0 | 137.0610 | 111.1681 | .8275E-03 | .6345E-02 |
| .130 | 70.877 | .1801E+05 | 2.938 | 137.0 | 111.0 | 137.2705 | 111.2490 | .6847E-03 | .1752E-02 |
| .133 | 1.830 | .1817E+05 | 2.903 | 137.5 | 111.0 | 137.4921 | 111.3296 | .9675E-03 | .1237E-02 |
| .198 | 8.190 | .2311E+05 | 2.969 | 138.0 | 111.5 * | 137.7020 | 111.3457 | .1658E-02 | .2089E-01 |
| .245 | 14.378 | .2195E+05 | 2.896 | 138.0 | 111.5 * | 137.9329 | 111.3294 | .1075E-01 | .2031E-01 |
| .262 | 20.716 | .1873E+05 | 2.910 | 138.0 | 111.0 | 138.1639 | 111.3246 | .6664E-03 | .9128E-03 |
| .240 | 26.976 | .1785E+05 | 2.909 | 138.5 | 111.0 | 138.3685 | 111.2883 | .9205E-03 | .9393E-03 |
| .307 | 33.252 | .1756E+05 | 2.886 | 138.5 | 111.0 | 138.5585 | 111.2005 | .9157E-03 | .1536E-02 |
| .226 | 39.531 | .1937E+05 | 2.921 | 139.0 | 111.0 | 138.7351 | 111.0810 | .1023E-02 | .1192E-02 |
| .161 | 45.803 | .1784E+05 | 2.885 | 139.0 | 111.0 | 138.9550 | 110.9778 | .1621E-02 | .1095E-02 |
| .153 | 52.116 | .1585E+05 | 2.870 | 139.0 | 111.0 | 139.1669 | 110.8631 | .8889E-03 | .1638E-02 |
| .187 | 58.370 | .1251E+05 | 2.862 | 139.5 | 111.0 | 139.3229 | 110.7020 | .7429E-03 | .1187E-02 |
| .178 | 64.654 | .1025E+05 | 2.719 | 139.5 | 110.5 | 139.4614 | 110.5591 | .6348E-03 | .4717E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta r1 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | -.00028 | -.00017 | -.01516 | .01236 | .00258 | .00502 |
| 1 | -.00340 | .01075 | .03431 | .01228 | .00180 | .01752 |
| 2 | -.04200 | -.00260 | -.00204 | -.00954 | -.00252 | .01016 |
| 3 | .01102 | .02084 | .03051 | .03464 | .00226 | .01777 |
| 4 | .00554 | -.01130 | -.01278 | -.01414 | -.01317 | .02375 |
| 5 | -.00033 | -.00781 | -.01181 | -.02693 | -.00020 | .00103 |
| 6 | -.00456 | .00910 | .00549 | .02457 | .02627 | .00528 |
| 7 | .01094 | -.00304 | .01163 | -.00861 | .01639 | -.01573 |
| 8 | -.00602 | .02510 | .01772 | -.00046 | .01813 | .02418 |
| 9 | -.00317 | -.04417 | -.02620 | .00460 | -.01002 | -.00287 |

x0= 137.8345 y0= 109.2260 r0= 2.10614419 std.dev.= .01703058

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| ax | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 2 | 3 | 8 | 20 | 27 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .00037 | -.00753 | -.01464 | .01282 | .00295 | .00534 |
| 1 | -.00316 | .01094 | .03443 | .01234 | -.00180 | -.01790 |
| 2 | -.04212 | -.00976 | -.00925 | -.00978 | -.00279 | .00936 |
| 3 | .01071 | .02051 | .03019 | .03431 | .00895 | .01697 |
| 4 | .00528 | -.01562 | -.01997 | -.01429 | -.01328 | -.02870 |
| 5 | -.00032 | -.00773 | -.01168 | -.02674 | -.00793 | .00142 |
| 6 | -.00417 | .00958 | .00604 | .02516 | .02892 | .00598 |
| 7 | .01169 | -.00224 | .01247 | -.00774 | -.01549 | -.01480 |
| 8 | -.00507 | .02606 | | | .01908 | .02511 |
| 9 | -.00226 | -.04329 | -.02536 | .00539 | -.00927 | -.00218 |

$\mu_0 = 137.8346$ $\sigma_0 = 109.2254$ $r_0 = 2.10582757$ $\text{std. dev.} = .01715546$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 2 | 3 | 8 | 17 | 28 | 2 |

ORIGINAL PAGE IS
OF POOR QUALITY

Disk 12-B Track data file TDATA11

NDR0:
Integration delay: .1160E+00
Thresholds: .1838E+06

Coarse 1.0
Fine 1.0
Track 192.0

.4564E+00
.9190E+05
.7974E+00
.7352E+06

Constants: .34700
Displacements: 0.00000

.27500
0.00000

.40800
0.00000

.29800
0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .279 | 1.809 | .1280E+05 | 6.123 | 139.5 | 110.0 | 139.6419 | 110.2534 | .3462E-02 | .3509E-01 |
| .304 | 8.159 | .1337E+05 | 6.117 | 140.0 | 110.0 | 139.7500 | 110.0430 | .2638E-02 | .1721E-02 |
| .285 | 14.374 | .1340E+05 | 6.111 | 140.0 | 110.0 | 139.8531 | 109.8557 | .2257E-02 | .4922E-02 |
| .422 | 20.720 | .1329E+05 | 6.010 | 140.0 | 109.5 | 139.8901 | 109.5910 | .2565E-02 | .2069E-02 |
| .408 | 26.955 | .1320E+05 | 6.051 | 140.0 | 109.5 | 139.9214 | 109.3540 | .2875E-02 | .1661E-02 |
| .361 | 33.248 | .1302E+05 | 6.155 | 140.0 | 109.0 | 139.9104 | 109.1151 | .2642E-02 | .5193E-02 |
| .358 | 39.530 | .1296E+05 | 6.130 | 140.0 | 109.0 | 139.9145 | 108.9258 | .2383E-02 | .2161E-02 |
| .332 | 45.804 | .1292E+05 | 6.094 | 140.0 | 109.0 | 139.8942 | 108.6910 | .1811E-02 | .1977E-02 |
| .380 | 52.089 | .1304E+05 | 5.995 | 140.0 | 108.5 | 139.8035 | 108.4974 | .2602E-02 | .1307E-02 |
| .313 | 58.354 | .1317E+05 | 6.197 | 139.5 | 108.0 | 139.6684 | 108.3484 | .4127E-02 | .9251E-01 |
| .355 | 64.625 | .1282E+05 | 6.160 | 139.5 | 108.0 | 139.5435 | 108.1003 | .1250E-02 | .1613E-02 |
| .428 | 70.880 | .1292E+05 | 6.140 | 139.5 | 108.0 | 139.4087 | 107.9579 | .1574E-02 | .5039E-02 |
| .445 | 1.799 | .1327E+05 | 6.178 | 139.0 | 108.0 | 139.2670 | 107.7515 | .1806E-02 | .5992E-02 |
| .296 | 8.183 | .1296E+05 | 6.018 | 139.0 | 107.5 | 139.0844 | 107.6049 | .3176E-02 | .2138E-02 |
| .262 | 14.377 | .1293E+05 | 6.014 | 139.0 | 107.5 | 138.9064 | 107.4766 | .2393E-02 | .1889E-02 |
| .389 | 20.718 | .1309E+05 | 6.080 | 139.0 | 107.5 | 138.7041 | 107.3715 | .1862E-02 | .2190E-02 |
| .377 | 26.954 | .1102E+05 | 6.174 | 138.5 | 107.0 | 138.5368 | 107.2738 | .2727E-02 | .2137E-02 |
| .302 | 33.237 | .1095E+05 | 6.171 | 138.5 | 107.0 | 138.3264 | 107.2118 | .1362E-02 | .3262E-02 |
| .234 | 39.540 | .1083E+05 | 6.156 | 138.0 | 107.0 | 138.0978 | 107.1378 | .1592E-02 | .3022E-02 |
| .215 | 45.817 | .1083E+05 | 6.167 | 138.0 | 107.0 | 137.8616 | 107.1094 | .3266E-02 | .1919E-02 |
| .130 | 52.095 | .1062E+05 | 6.117 | 137.5 | 107.0 | 137.6579 | 107.1176 | .8822E-03 | .2338E-02 |
| .142 | 58.358 | .1061E+05 | 6.131 | 137.5 | 107.0 | 137.4660 | 107.1596 | .5688E-03 | .5447E-02 |
| .111 | 64.635 | .1060E+05 | 6.139 | 137.0 | 107.0 | 137.2204 | 107.1903 | .2733E-02 | .3528E-02 |
| .187 | 70.816 | .1071E+05 | 6.137 | 137.0 | 107.0 | 136.9977 | 107.2804 | .1540E-02 | .2770E-02 |
| .195 | 1.805 | .1098E+05 | 6.047 | 137.0 | 107.5 | 136.7862 | 107.4075 | .2490E-02 | .5866E-02 |
| .201 | 8.180 | .1316E+05 | 5.980 | 136.5 | 107.5 | 136.6474 | 107.5128 | .2683E-02 | .1344E-02 |
| .257 | 14.371 | .1315E+05 | 6.031 | 136.5 | 107.5 | 136.4817 | 107.6366 | .2224E-02 | .1716E-02 |
| .358 | 20.723 | .1356E+05 | 6.162 | 136.5 | 108.0 | 136.3183 | 107.7872 | .1436E-02 | .3938E-02 |
| .335 | 26.954 | .1360E+05 | 6.142 | 136.0 | 108.0 | 136.1618 | 107.9353 | .4088E-02 | .1450E-02 |
| .380 | 33.247 | .1352E+05 | 6.141 | 136.0 | 108.0 | 136.0050 | 108.1068 | .4069E-02 | .3489E-02 |
| .318 | 39.529 | .1280E+05 | 6.026 | 136.0 | 108.5 | 135.9260 | 108.3297 | .1954E-02 | .1398E-02 |
| .324 | 45.812 | .1277E+05 | 5.957 | 136.0 | 108.5 | 135.8424 | 108.5328 | .1428E-02 | .2077E-02 |
| .330 | 52.081 | .1267E+05 | 6.061 | 136.0 | 109.0 | 135.8102 | 108.7297 | .3289E-02 | .2693E-02 |
| .339 | 58.376 | .9117E+04 | 6.078 | 135.5 | 109.0 | 135.8790 | 108.9484 | .6663E-01 | .3527E-02 |
| .341 | 64.606 | .8184E+04 | 6.080 | 135.5 | 109.0 | 135.8676 | 109.1427 | .2189E-02 | .5074E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

TM81-04

| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .371 | 1.309 | .1296E+05 | 5.985 | 136.0 | 109.5 | 135.7458 | 109.6369 | .1527E-02 | .2014E-02 |
| .332 | 8.176 | .1321E+05 | 6.101 | 136.0 | 110.0 | 135.8120 | 109.8744 | .1747E-02 | .4527E-02 |
| .338 | 14.356 | .1311E+05 | 6.113 | 136.0 | 110.0 | 135.8525 | 110.0409 | .2297E-02 | .3323E-02 |
| .318 | 20.712 | .1312E+05 | 6.095 | 136.0 | 110.0 | 135.9332 | 110.2302 | .2419E-02 | .2659E-02 |
| .237 | 26.969 | .1260E+05 | 5.904 | 136.0 | 110.5 | 136.0487 | 110.3896 | .2440E-02 | .4761E-02 |
| .265 | 33.266 | .1278E+05 | 5.906 | 136.0 | 110.5 | 136.1776 | 110.5724 | .2633E-02 | .4657E-02 |
| .262 | 39.540 | .1262E+05 | 6.010 | 136.5 | 111.0 | 136.3312 | 110.7347 | .1474E-02 | .4855E-02 |
| .307 | 45.825 | .1278E+05 | 6.020 | 136.5 | 111.0 | 136.4780 | 110.8841 | .2220E-02 | .4649E-02 |
| .307 | 52.069 | .1283E+05 | 6.018 | 136.5 | 111.0 | 136.6456 | 110.9811 | .2707E-02 | .2236E-02 |
| .321 | 58.379 | .1053E+05 | 6.077 | 137.0 | 111.0 | 136.8263 | 111.0683 | .3941E-02 | .2304E-02 |
| .268 | 64.634 | .1050E+05 | 6.069 | 137.0 | 111.0 | 137.0310 | 111.1995 | .1148E-02 | .1995E-02 |
| .282 | 70.877 | .1044E+05 | 6.073 | 137.0 | 111.0 | 137.2480 | 111.2726 | .2007E-02 | .2917E-02 |
| .386 | 1.815 | .1057E+05 | 6.020 | 137.5 | 111.5 | 137.4590 | 111.3140 | .9180E-02 | .2146E-01 |
| .338 | 8.137 | .1045E+05 | 5.970 | 137.5 | 111.5 | 137.6758 | 111.3382 | .1077E-02 | .1694E-02 |
| .375 | 14.377 | .1058E+05 | 6.010 | 138.0 | 111.5 | 137.8994 | 111.3450 | .2258E-02 | .2390E-02 |
| .290 | 20.748 | .1049E+05 | 6.005 | 138.0 | 111.5 | 138.1479 | 111.3131 | .2126E-02 | .2874E-02 |
| .313 | 26.955 | .1041E+05 | 6.053 | 138.5 | 111.0 | 138.3392 | 111.3110 | .2306E-02 | .1203E-02 |
| .327 | 33.263 | .1042E+05 | 6.047 | 138.5 | 111.0 | 138.5237 | 111.2245 | .1317E-02 | .1732E-02 |
| .332 | 39.510 | .1035E+05 | 6.030 | 138.5 | 111.0 | 138.6987 | 111.1046 | .1024E-02 | .2665E-02 |
| .335 | 45.794 | .1239E+05 | 6.005 | 139.0 | 111.0 | 138.9121 | 110.9769 | .2012E-02 | .2589E-02 |
| .304 | 52.096 | .1229E+05 | 5.990 | 139.0 | 111.0 | 139.1216 | 110.8677 | .2685E-02 | .3013E-02 |
| .321 | 58.373 | .1194E+05 | 6.008 | 139.5 | 111.0 | 139.3143 | 110.7245 | .3512E-02 | .3486E-02 |
| .285 | 64.624 | .1138E+05 | 5.892 | 139.5 | 110.5 | 139.4431 | 110.5945 | .4327E-02 | .6326E-02 |
| .327 | 70.870 | .1173E+05 | 5.878 | 139.5 | 110.5 | 139.5597 | 110.4209 | .1417E-02 | .1483E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.01331 | -.00734 | .02685 | .00252 | .00775 | -.00222 |
| 1 | .02186 | .04986 | .02247 | -.04294 | -.02348 | -.05300 |
| 2 | -.01824 | -.02698 | -.02246 | -.02638 | -.00048 | -.00061 |
| 3 | .02751 | .03806 | .03570 | .01747 | .04269 | .03321 |
| 4 | .01092 | -.00557 | -.00484 | -.00412 | .01616 | .04576 |
| 5 | .00715 | .00566 | -.02124 | -.13230 | -.14059 | -.03338 |
| 6 | .01560 | .00923 | .02746 | .03372 | .01426 | .01717 |
| 7 | .01166 | .02399 | .00170 | -.00015 | .00428 | .01251 |
| 8 | .00609 | .00397 | .00719 | -.00045 | .03581 | .00628 |
| 9 | -.03793 | -.04731 | -.01474 | .00765 | .00916 | .00437 |

x0= 137.8205 x0= 109.2432 r0= 2.09608674 std.dev.= .03390471

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 3 | 5 | 6 | 12 | 11 | 23 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | | -.00738 | .02685 | .00249 | .00764 | -.00246 |
| 1 | .02149 | .04930 | .02169 | | -.02983 | -.05463 |
| 2 | -.02026 | -.02938 | -.02523 | -.02954 | -.00398 | -.00649 |
| 3 | .02322 | .03337 | .03068 | .01214 | .03699 | .02718 |
| 4 | .00459 | -.01210 | -.01159 | -.01106 | .00907 | .03854 |
| 5 | -.00015 | -.00167 | -.02856 | | -.14780 | |
| 6 | .00870 | .00256 | .02097 | .02747 | .00826 | .01147 |
| 7 | .00630 | .01897 | -.00302 | -.00451 | .00032 | .00895 |
| 8 | | .00116 | .00476 | -.00248 | .03406 | .00482 |
| 9 | -.03911 | -.04818 | -.01536 | .00724 | .00890 | .00422 |

x0= 137.8170 y0= 109.2421 r0= 2.09975147 std.dev.= .02948345

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 2 | 2 | 6 | 13 | 7 | 25 | 5 |

ORIGINAL PAGE IS
OF POOR QUALITY

Disk 12-A Track data file IDATA03

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 16.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .3217E+06 | .9190E+05 | .7352E+06 |
| Constants: | .34700 | .27500 | .40800 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 |

| time | angle | dark | star | reference | | position | | standard deviation | |
|--------|--------|-----------|-------|-----------|-------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| 10.151 | 70.884 | .5138E+05 | .885 | 139.5 | 110.5 | 139.5705 | 110.4394 | .7555E-03 | .8922E-03 |
| 10.163 | 1.795 | .7907E+05 | 1.089 | 139.5 | 110.0 | 139.6756 | 110.2794 | .9011E-03 | .1240E-02 |
| 10.208 | 8.172 | .8837E+05 | 1.136 | 140.0 | 110.0 | 139.7353 | 110.0572 | .1473E-03 | .7422E-03 |
| 10.210 | 14.366 | .8937E+05 | 1.117 | 140.0 | 110.0 | 139.8325 | 109.8747 | .7652E-03 | .6820E-03 |
| 10.202 | 20.716 | .8160E+05 | 1.026 | 140.0 | 109.5 | 139.8871 | 109.6430 | .8101E-02 | .5531E-02 |
| 10.163 | 26.935 | .7155E+05 | 1.007 | 140.0 | 109.5 | 139.9159 | 109.3969 | .2099E-02 | .9272E-03 |
| 10.219 | 33.251 | .6030E+05 | 1.180 | 140.0 | 109.0 | 139.9117 | 109.1776 | .1261E-02 | .1278E-02 |
| 10.241 | 39.515 | .6011E+05 | 1.172 | 140.0 | 109.0 | 139.9026 | 108.9770 | .4170E-03 | .1343E-02 |
| 10.174 | 45.792 | .6142E+05 | 1.121 | 140.0 | 109.0 | 139.8802 | 108.7526 | .1464E-02 | .1085E-02 |
| 10.199 | 52.067 | .7357E+05 | .978 | 140.0 | 108.5 | 139.7948 | 108.5474 | .1263E-02 | .3774E-03 |
| 10.272 | 58.364 | .1543E+06 | 1.276 | 140.0 | 108.0 | 139.7072 | 108.4367 | .1529E-01 | .1786E+00 |
| 10.250 | 64.593 | .9337E+05 | 1.147 | 139.5 | 108.0 | 139.5752 | 108.1422 | .7040E-03 | .2232E-02 |
| 10.325 | 70.884 | .9881E+05 | 1.137 | 139.5 | 108.0 | 139.4285 | 107.9912 | .9036E-03 | .8985E-03 |
| 10.252 | 1.802 | .1124E+06 | 1.194 | 139.0 | 108.0 | 139.2902 | 107.8157 | .7152E-03 | .8836E-03 |
| 10.199 | 8.145 | .1112E+06 | 1.051 | 139.0 | 107.5 | 139.1231 | 107.6512 | .3616E-02 | .1831E-01 |
| 10.135 | 14.358 | .1100E+06 | .994 | 139.0 | 107.5 | 138.9510 | 107.5207 | .1176E-02 | .9840E-03 |
| 10.174 | 20.723 | .1117E+06 | 1.024 | 139.0 | 107.5 | 138.7527 | 107.4144 | .1913E-02 | .8704E-03 |
| 10.163 | 26.959 | .9797E+05 | 1.145 | 139.5 | 107.0 | 138.5631 | 107.3115 | .1061E-02 | .9108E-03 |
| 10.163 | 33.259 | .9479E+05 | 1.154 | 138.5 | 107.0 | 138.3457 | 107.2411 | .1311E-02 | .1319E-02 |
| 10.160 | 39.528 | .9416E+05 | 1.180 | 138.0 | 107.0 | 138.1076 | 107.1771 | .1610E-02 | .1157E-02 |
| 10.174 | 45.814 | .9727E+05 | 1.198 | 138.0 | 107.0 | 137.8773 | 107.1481 | .7152E-03 | .1422E-02 |
| 10.185 | 52.094 | .1009E+06 | 1.233 | 138.0 | 107.0 | 137.6696 | 107.1526 | .1336E-02 | .7256E-03 |
| 10.171 | 58.373 | .9237E+05 | 1.141 | 137.5 | 107.0 | 137.4846 | 107.2033 | .1252E-02 | .2476E-02 |
| 10.163 | 64.594 | .9334E+05 | 1.182 | 137.0 | 107.0 | 137.2460 | 107.2448 | .1169E-02 | .1199E-02 |
| 10.179 | 70.881 | .9847E+05 | 1.171 | 137.0 | 107.0 | 137.0272 | 107.3327 | .7926E-03 | .2179E-02 |
| 10.219 | 1.808 | .1059E+06 | 1.004 | 137.0 | 107.5 | 136.8005 | 107.4528 | .9818E-03 | .1537E-02 |
| 10.185 | 8.172 | .9888E+05 | .964 | 136.5 | 107.5 | 136.6476 | 107.5556 | .1462E-02 | .9415E-03 |
| 10.264 | 14.364 | .1042E+06 | 1.134 | 136.5 | 108.0 | 136.4721 | 107.6552 | .4286E-03 | .3941E-03 |
| 10.275 | 20.722 | .1086E+06 | 1.219 | 136.0 | 108.0 | 136.3217 | 107.8327 | .1881E-02 | .1851E-02 |
| 10.283 | 26.977 | .1071E+06 | 1.180 | 136.0 | 108.0 | 136.1731 | 107.9982 | .1115E-02 | .4070E-03 |
| 10.289 | 33.263 | .1006E+06 | 1.178 | 136.0 | 108.0 | 136.0200 | 108.1809 | .1666E-02 | .1575E-02 |
| 10.233 | 39.542 | .7351E+05 | 1.019 | 136.0 | 108.5 | 135.9224 | 108.3727 | .1059E-02 | .1315E-02 |
| 10.194 | 45.810 | .7209E+05 | .982 | 136.0 | 108.5 | 135.8387 | 108.5762 | .1074E-02 | .4531E-03 |
| 10.219 | 52.104 | .6437E+05 | 1.128 | 136.0 | 109.0 | 135.7910 | 108.7706 | .1125E-02 | .6094E-03 |
| 10.236 | 58.364 | .6303E+05 | 1.168 | 136.0 | 109.0 | 135.7326 | 108.9830 | .6301E-03 | .1390E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 10.205 | 70.873 | .8045E+05 | .986 | 136.0 | 109.5 | 135.7121 | 109.4363 | .1087E-02 | .1227E-02 |
| 10.230 | 1.823 | .9596E+05 | 1.108 | 136.0 | 110.0 | 135.7451 | 109.6834 | .1054E-02 | .1390E-02 |
| 10.255 | 8.192 | .8740E+05 | 1.140 | 136.0 | 110.0 | 135.7859 | 109.9192 | .9619E-03 | .1731E-02 |
| 10.191 | 14.374 | .8620E+05 | 1.166 | 136.0 | 110.0 | 135.8317 | 110.0849 | .7004E-02 | .7461E-03 |
| 10.236 | 20.754 | .8900E+05 | 1.124 | 136.0 | 110.0 | 135.9284 | 110.2998 | .1589E-02 | .1594E-02 |
| 10.160 | 26.990 | .5574E+05 | .901 | 136.0 | 110.5 | 136.0439 | 110.4448 | .9027E-03 | .7109E-03 |
| 10.123 | 33.279 | .6341E+05 | .941 | 136.0 | 110.5 | 136.1713 | 110.6433 | .1871E-02 | .8865E-03 |
| 10.143 | 39.545 | .7336E+05 | 1.142 | 136.0 | 111.0 | 136.3114 | 110.7913 | .1405E-02 | .1664E-02 |
| 10.149 | 45.832 | .8147E+05 | 1.065 | 136.5 | 111.0 | 136.4813 | 110.9379 | .8930E-03 | .1971E-02 |
| 10.199 | 52.087 | .8780E+05 | 1.068 | 136.5 | 111.0 | 136.6588 | 111.0325 | .8466E-03 | .5995E-03 |
| 10.129 | 58.403 | .9754E+05 | 1.141 | 137.0 | 111.0 | 136.8289 | 111.1388 | .2307E-02 | .8727E-03 |
| 10.168 | 64.558 | .9712E+05 | 1.121 | 137.0 | 111.0 | 137.0415 | 111.2503 | .2024E-02 | .2484E-02 |
| 10.216 | 70.895 | .9662E+05 | 1.121 | 137.0 | 111.0 | 137.2609 | 111.3352 | .1033E-02 | .1611E-02 |
| 10.157 | 1.823 | .9882E+05 | .971 | 137.5 | 111.5 | 137.4785 | 111.3604 | .1205E-02 | .1403E-02 |
| 10.135 | 8.187 | .1083E+06 | 1.026 | 138.0 | 111.5 | 137.6852 | 111.3930 | .2182E-02 | .1277E-02 |
| 10.160 | 14.389 | .1029E+06 | 1.006 | 138.0 | 111.5 | 137.9131 | 111.3890 | .1612E-02 | .1501E-02 |
| 10.182 | 20.762 | .9947E+05 | 1.008 | 138.0 | 111.5 | 138.1613 | 111.3524 | .1050E-02 | .5094E-03 |
| 10.137 | 26.970 | .9521E+05 | 1.093 | 138.5 | 111.0 | 138.3503 | 111.3654 | .1343E-02 | .2181E-02 |
| 10.160 | 33.242 | .9403E+05 | 1.085 | 138.5 | 111.0 | 138.5491 | 111.2786 | .1108E-02 | .1905E-02 |
| 10.157 | 39.530 | .1005E+06 | 1.135 | 139.0 | 111.0 | 138.7131 | 111.1549 | .6367E-03 | .9459E-03 |
| 10.154 | 45.818 | .9386E+05 | 1.106 | 139.0 | 111.0 | 138.9238 | 111.0363 | .1181E-02 | .1029E-02 |
| 10.151 | 52.080 | .8618E+05 | 1.081 | 139.0 | 111.0 | 139.1404 | 110.9279 | .1291E-02 | .5957E-03 |
| 10.135 | 58.375 | .7277E+05 | 1.087 | 139.0 | 111.0 | 139.3018 | 110.7735 | .2949E-02 | .1381E-02 |
| 10.121 | 64.653 | .5926E+05 | .915 | 139.5 | 110.5 | 139.4401 | 110.6197 | .9959E-03 | .9430E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.00181 | .00734 | -.03195 | .00071 | .00220 | .00372 |
| 1 | -.00031 | .01065 | .03339 | .01361 | -.02543 | -.00047 |
| 2 | -.03104 | -.01733 | -.00674 | -.00158 | -.00799 | .00962 |
| 3 | .01019 | .02601 | .03504 | .03390 | .00369 | .01317 |
| 4 | -.00040 | -.01223 | -.02069 | .00386 | -.02572 | -.02337 |
| 5 | -.00278 | -.00976 | -.01290 | -.02357 | -.00811 | -.00488 |
| 6 | -.00486 | -.00561 | .01222 | .02478 | .02835 | .00326 |
| 7 | .01862 | .01479 | .01063 | -.01754 | -.01284 | -.00007 |
| 8 | .01229 | -.00841 | .00169 | -.00336 | -.01253 | .03997 |
| 9 | .01704 | -.03236 | -.03307 | .00588 | -.00042 | -.00071 |

x0= 137.8085 y0= 109.2885 r0= 2.10646009 std.dev.= .01728430

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 8 | 8 | 16 | 28 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.00290 | .00615 | -.03323 | -.00067 | .00074 | .00218 |
| 1 | -.00191 | .00900 | .03170 | .01190 | | -.00241 |
| 2 | -.03277 | .01903 | | -.00320 | -.00955 | .00012 |
| 3 | .00878 | .02470 | .03382 | .03279 | .00266 | .01226 |
| 4 | -.00118 | -.01287 | -.02123 | .00347 | -.02603 | -.02356 |
| 5 | -.00286 | -.00974 | -.01278 | -.02336 | -.00783 | -.00452 |
| 6 | -.00444 | -.00514 | .01273 | .02530 | .02889 | .00380 |
| 7 | .01914 | .01530 | .01110 | -.01711 | -.01246 | .00073 |
| 8 | .01251 | -.00827 | .00174 | -.00342 | -.01272 | .03969 |
| 9 | .01665 | -.03286 | -.03370 | .00512 | -.00129 | -.00179 |

$\mu_0 = 137.8095$ $\sigma_0 = 109.2879$ $r_0 = 2.10705686$ $\text{std. dev.} = .01721284$

HISTOGRAM DEVIATION $\geq e$

| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|----|-----|-----|-----|-----|-----|------|------------|
| | 0 | 0 | 8 | 7 | 14 | 29 | 2 |

ORIGINAL PAGE IS
OF POOR QUALITY

Disk 12-A Track data file TDATA01

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 64.0 |
| NDRO: | | | |
| Integration delay: | .1140E+00 | .4564E+00 | .1344E-02 |
| Threshold: | .1838E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .34700 | .27500 | .40800 | .29800 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 10.168 | 1.795 | .2396E+05 | 2.870 | 139.5 | 110.0 | 139.6577 | 110.3169 | .4613E-03 | .1770E-02 |
| 10.179 | 8.141 | .2605E+05 | 2.915 | 140.0 | 110.0 | 139.7127 | 110.0869 | .1343E-02 | .1710E-02 |
| 10.185 | 14.347 | .2643E+05 | 2.895 | 140.0 | 110.0 | 139.8070 | 109.9034 | .1384E-02 | .1231E-02 |
| 10.168 | 20.725 | .2801E+05 | 2.900 | 140.0 | 110.0 | 139.8763 | 109.6624 | .1282E-02 | .2321E-02 |
| 10.143 | 26.945 | .2297E+05 | 2.780 | 140.0 | 109.5 | 139.8911 | 109.4363 | .1177E-02 | .4262E-03 |
| 10.126 | 33.222 | .2061E+05 | 2.948 | 140.0 | 109.0 | 139.8906 | 109.2073 | .8273E-03 | .1855E-02 |
| 10.165 | 39.518 | .2000E+05 | 2.946 | 140.0 | 109.0 | 139.8743 | 108.9965 | .1448E-02 | .1718E-02 |
| 10.216 | 45.798 | .2053E+05 | 2.902 | 140.0 | 109.0 | 139.8528 | 108.7810 | .6338E-03 | .2224E-02 |
| 10.151 | 52.075 | .2151E+05 | 2.768 | 140.0 | 108.5 | 139.7765 | 108.5839 | .5568E-03 | .1149E-02 |
| 10.179 | 58.367 | .2177E+05 | 2.755 | 139.5 | 108.5 | 139.6696 | 108.3648 | .7522E-03 | .1294E-02 |
| | | | | | | | | | |
| 10.269 | 64.603 | .2642E+05 | 2.927 | 139.5 | 108.0 | 139.5564 | 108.1666 | .5983E-03 | .1723E-02 |
| 10.247 | 70.830 | .2719E+05 | 2.927 | 139.5 | 108.0 | 139.4157 | 108.0102 | .2117E-02 | .7328E-03 |
| 10.196 | 1.791 | .3074E+05 | 2.965 | 139.0 | 108.0 | 139.2768 | 107.8466 | .0697E-03 | .1426E-02 |
| 10.216 | 8.148 | .3177E+05 | 2.923 | 139.0 | 108.0 | 139.1135 | 107.6458 | .9612E-03 | .9312E-03 |
| 10.112 | 14.351 | .2989E+05 | 2.784 | 139.0 | 107.5 | 138.9281 | 107.5497 | .5544E-03 | .1684E-02 |
| 10.154 | 20.701 | .3029E+05 | 2.806 | 139.0 | 107.5 | 138.7310 | 107.4432 | .1082E-02 | .1430E-02 |
| 10.076 | 26.939 | .2725E+05 | 2.926 | 136.5 | 107.0 | 138.5414 | 107.3404 | .1170E-02 | .1685E-02 |
| 10.135 | 33.225 | .2633E+05 | 2.932 | 138.5 | 107.0 | 138.3285 | 107.2712 | .1077E-02 | .1986E-02 |
| 10.045 | 39.524 | .2614E+05 | 2.950 | 138.0 | 107.0 | 138.0849 | 107.1955 | .3696E-03 | .2720E-02 |
| 10.126 | 45.818 | .2704E+05 | 2.970 | 138.0 | 107.0 | 137.8553 | 107.1716 | .1024E-02 | .1842E-02 |
| | | | | | | | | | |
| 10.143 | 52.082 | .2563E+05 | 2.918 | 137.5 | 107.0 | 137.6682 | 107.1818 | .9179E-03 | .1521E-02 |
| 10.135 | 58.361 | .2569E+05 | 2.923 | 137.5 | 107.0 | 137.4696 | 107.2235 | .5911E-03 | .1644E-02 |
| 10.151 | 64.632 | .2615E+05 | 2.945 | 137.0 | 107.0 | 137.2296 | 107.2651 | .1374E-02 | .5491E-03 |
| 10.165 | 70.880 | .3124E+05 | 2.884 | 137.0 | 107.5 | 137.0203 | 107.3591 | .1621E-01 | .5170E-02 |
| 10.118 | 1.784 | .2887E+05 | 2.786 | 137.0 | 107.5 | 136.7820 | 107.4719 | .4381E-03 | .4477E-03 |
| 10.073 | 8.158 | .2716E+05 | 2.762 | 136.5 | 107.5 | 136.6301 | 107.5717 | .2125E-02 | .7297E-03 |
| 10.266 | 14.362 | .2880E+05 | 2.918 | 136.5 | 108.0 | 136.4563 | 107.6694 | .1375E-02 | .7023E-03 |
| 10.283 | 20.721 | .2978E+05 | 2.981 | 136.0 | 108.0 | 136.3087 | 107.8441 | .1569E-02 | .4424E-02 |
| 10.247 | 26.974 | .2952E+05 | 2.942 | 136.0 | 108.0 | 136.1526 | 108.0021 | .5350E-03 | .9653E-03 |
| 10.247 | 33.250 | .2828E+05 | 2.942 | 136.0 | 108.0 | 135.9990 | 108.1892 | .1667E-02 | .1367E-02 |
| | | | | | | | | | |
| 10.202 | 39.515 | .2179E+05 | 2.789 | 136.0 | 108.5 | 135.9080 | 108.3893 | .9645E-03 | .9620E-03 |
| 10.160 | 45.806 | .2156E+05 | 2.766 | 136.0 | 108.5 | 135.8223 | 108.5931 | .9238E-03 | .8223E-03 |
| 10.196 | 52.077 | .2068E+05 | 2.902 | 136.0 | 109.0 | 135.7746 | 108.7819 | .1196E-02 | .1941E-02 |
| 10.177 | 58.378 | .2071E+05 | 2.940 | 136.0 | 109.0 | 135.7126 | 108.9853 | .1921E-02 | .1221E-02 |
| 10.199 | 64.590 | .1066E+05 | 2.886 | 135.5 | 109.0 | 135.7685 | 109.1147 | .1560E-02 | .1004E-02 |

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TR3104

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 10.196 | 20.717 | .2643E+05 | 2.893 | 136.0 | 110.0 | 135.7288 | 109.6888 | .1277E-02 | .1087E-02 |
| 10.205 | 1.788 | .2854E+05 | 2.893 | 136.0 | 110.0 | 135.7288 | 109.6888 | .1277E-02 | .1087E-02 |
| 10.213 | 8.156 | .2638E+05 | 2.913 | 136.0 | 110.0 | 135.7695 | 109.9193 | .5510E-03 | .1157E-02 |
| 10.216 | 14.351 | .2596E+05 | 2.927 | 136.0 | 110.0 | 135.8126 | 110.0342 | .5183E-03 | .7830E-03 |
| 10.196 | 20.717 | .2643E+05 | 2.893 | 136.0 | 110.0 | 135.9125 | 110.3036 | .1004E-02 | .5447E-03 |
| 10.132 | 26.961 | .1816E+05 | 2.678 | 136.0 | 110.5 | 136.0302 | 110.4508 | .1169E-02 | .7852E-03 |
| 10.149 | 33.245 | .2002E+05 | 2.724 | 136.0 | 110.5 | 136.1602 | 110.6486 | .4479E-03 | .1191E-02 |
| 10.174 | 39.526 | .2194E+05 | 2.859 | 136.5 | 111.0 | 136.3090 | 110.7982 | .4150E-02 | .4633E-02 |
| 10.143 | 45.811 | .2335E+05 | 2.840 | 136.5 | 111.0 | 136.4697 | 110.9394 | .4512E-03 | .7677E-02 |
| 10.112 | 52.083 | .2450E+05 | 2.838 | 136.5 | 111.0 | 136.6474 | 111.0342 | .7677E-03 | .3850E-03 |
| 10.165 | 58.376 | .2688E+05 | 2.903 | 137.0 | 111.0 | 136.8103 | 111.1331 | .1007E-02 | .3344E-03 |
| 10.143 | 64.649 | .2655E+05 | 2.885 | 137.0 | 111.0 | 137.0252 | 111.2468 | .7752E-03 | .1374E-02 |
| 10.157 | 70.891 | .2643E+05 | 2.886 | 137.0 | 111.0 | 137.2467 | 111.3334 | .1592E-02 | .1076E-02 |
| 10.179 | 1.798 | .2642E+05 | 2.763 | 137.5 | 111.5 | 137.4692 | 111.3643 | .5916E-03 | .3712E-03 |
| 10.146 | 8.160 | .2822E+05 | 2.786 | 133.0 | 111.5 | 137.6789 | 111.3988 | .1031E-01 | .2516E-02 |
| 10.168 | 14.352 | .2792E+05 | 2.782 | 138.0 | 111.5 | 137.8969 | 111.3960 | .9666E-03 | .7489E-03 |
| 10.205 | 20.739 | .2697E+05 | 2.783 | 138.0 | 111.5 | 138.1446 | 111.3599 | .1402E-02 | .1826E-02 |
| 10.202 | 26.968 | .2601E+05 | 2.869 | 138.5 | 111.0 | 138.3441 | 111.3624 | .1436E-02 | .1507E-02 |
| 10.182 | 33.259 | .2572E+05 | 2.859 | 138.5 | 111.0 | 138.5378 | 111.2812 | .7886E-03 | .1760E-02 |
| 10.179 | 39.546 | .2779E+05 | 2.900 | 139.0 | 111.0 | 138.6968 | 111.1527 | .1131E-02 | .1854E-02 |
| 10.149 | 45.799 | .2614E+05 | 2.864 | 139.0 | 111.0 | 138.9036 | 111.0336 | .1269E-02 | .1219E-02 |
| 10.151 | 52.115 | .2455E+05 | 2.838 | 139.0 | 111.0 | 139.1245 | 110.9242 | .1883E-02 | .1316E-02 |
| 10.151 | 58.370 | .2128E+05 | 2.829 | 139.5 | 111.0 | 139.2929 | 110.7798 | .9304E-03 | .4167E-03 |
| 10.149 | 64.621 | .1854E+05 | 2.704 | 139.5 | 110.5 | 139.4293 | 110.6298 | .5724E-03 | .7060E-03 |
| 10.137 | 70.880 | .1700E+05 | 2.666 | 139.5 | 110.5 | 139.5567 | 110.4523 | .1550E-02 | .1231E-02 |

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| | | | delta ri | | | |
|---|---------|---------|----------|---------|---------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | .02326 | -.02598 | .00179 | .01399 | .00192 | .00007 |
| 1 | .00286 | .02734 | .00852 | -.00341 | .00385 | .02714 |
| 2 | -.02284 | .01689 | -.01358 | -.01932 | .00186 | .00111 |
| 3 | .02538 | .03010 | .02277 | .00252 | .01255 | .00173 |
| 4 | -.00979 | -.01571 | .00972 | -.01260 | .00695 | .01134 |
| 5 | -.00526 | -.00563 | -.01501 | .00510 | .06759 | .00521 |
| 6 | .00141 | .01698 | .03077 | .03227 | .00585 | .01221 |
| 7 | .00917 | .00638 | -.01862 | -.01552 | -.00724 | .00572 |
| 8 | -.01069 | .00161 | -.00183 | -.01074 | .03426 | .01575 |
| 9 | -.03919 | -.04186 | -.00051 | .00630 | .00777 | .00602 |

x0= 137.7938 r0= 109.3006 r0= 2.09972954 std.dev.= .01869231

HISTOGRAM DEVIATION >= e

| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|----|-----|-----|-----|-----|-----|------|------------|
| | 1 | 1 | 5 | 7 | 16 | 30 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

delta ri

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .02340 | -.02588 | .00187 | .01402 | .00122 | -.00001 |
| 1 | .00277 | .02371 | .00835 | -.00362 | .00411 | .00243 |
| 2 | -.02317 | -.01651 | -.01388 | -.01975 | .00232 | .00160 |
| 3 | .02488 | .02958 | .02224 | .00199 | .01201 | |
| 4 | -.01032 | -.01623 | .00921 | -.00009 | .00742 | .01050 |
| 5 | -.00567 | -.00601 | -.01535 | .00479 | -.00756 | .00540 |
| 6 | .00123 | .01684 | .03066 | .03221 | .00562 | .01822 |
| 7 | .00922 | .00647 | -.01851 | -.01545 | -.00707 | .00559 |
| 8 | -.01047 | | -.00159 | -.01049 | .03451 | .01620 |
| 9 | -.03894 | -.04162 | -.00028 | .00650 | .00796 | .00618 |

x0= 137.7937 y0= 109.3002 r0= 2.09987283 std.dev.= .01896506

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 1 | 4 | 9 | 16 | 27 | 2 |

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Disk 12-A Track data file HM1002

NDRO:
 Integration delay: .1160E+00
 Thresholds: .1838E+06

Coarse 1.0
 Fine 1.0
 Track 192.0

.4564E+00
 .7974E+00
 .7352E+06

Constants: .34700
 Displacements: 0.00000

.27500
 0.00000

.40800
 0.00000

.29800
 0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 10.135 | 1.780 | .2682E+05 | 6.104 | 139.5 | 110.0 | 139.6527 | 110.3656 | .5471E-02 | .8918E-01 |
| 10.115 | 8.141 | .2711E+05 | 6.078 | 140.0 | 110.0 | 139.7373 | 110.1113 | .3656E-02 | .6739E-02 |
| 10.137 | 14.353 | .2728E+05 | 6.059 | 140.0 | 110.0 | 139.8359 | 109.9394 | .2571E-02 | .5045E-02 |
| 10.151 | 20.719 | .2734E+05 | 6.068 | 140.0 | 110.0 | 139.9087 | 109.6992 | .4354E-02 | .6171E-02 |
| 10.132 | 26.952 | .2713E+05 | 5.989 | 140.0 | 109.5 | 139.9163 | 109.4440 | .2959E-02 | .2644E-02 |
| 10.078 | 33.263 | .2694E+05 | 6.134 | 140.0 | 109.0 | 139.9085 | 109.2141 | .3626E-02 | .7028E-02 |
| 10.121 | 39.517 | .2691E+05 | 6.126 | 140.0 | 109.0 | 139.8987 | 108.9985 | .4490E-02 | .5702E-02 |
| 10.123 | 45.818 | .2692E+05 | 6.090 | 140.0 | 109.0 | 139.8830 | 108.7847 | .4210E-02 | .6537E-02 |
| 10.137 | 52.083 | .2694E+05 | 5.979 | 140.0 | 109.5 | 139.8024 | 108.5853 | .1319E-01 | .1032E-01 |
| 10.157 | 58.375 | .2607E+05 | 5.943 | 139.5 | 109.5 | 139.6468 | 108.3659 | .2822E-02 | .1415E-02 |
| 10.216 | 64.618 | .2664E+05 | 6.120 | 139.5 | 108.0 | 139.5423 | 108.1696 | .3820E-02 | .4771E-02 |
| 10.182 | 70.877 | .2662E+05 | 6.108 | 139.5 | 108.0 | 139.3976 | 108.0179 | .2873E-02 | .4864E-02 |
| 10.174 | 1.819 | .2706E+05 | 6.125 | 139.0 | 108.0 | 139.2460 | 107.8407 | .3035E-02 | .5077E-02 |
| 10.101 | 8.163 | .2699E+05 | 6.033 | 139.0 | 107.5 | 139.0774 | 107.6858 | .5748E-02 | .2099E-01 |
| 10.090 | 14.352 | .2697E+05 | 5.977 | 139.0 | 107.5 | 138.8960 | 107.5553 | .8030E-03 | .2142E-02 |
| 10.101 | 20.710 | .2705E+05 | 6.006 | 139.0 | 107.5 | 138.6945 | 107.4483 | .1675E-02 | .2879E-02 |
| 10.087 | 26.948 | .2402E+05 | 6.010 | 138.5 | 107.5 | 138.5373 | 107.3618 | .1279E-02 | .1979E-02 |
| 10.101 | 33.249 | .2402E+05 | 6.167 | 138.5 | 107.0 | 138.3139 | 107.3218 | .1980E-02 | .2318E-02 |
| 10.090 | 39.518 | .2374E+05 | 6.147 | 138.0 | 107.0 | 138.1173 | 107.2330 | .2166E-02 | .2586E-02 |
| 10.081 | 45.801 | .2382E+05 | 6.160 | 138.0 | 107.0 | 137.8650 | 107.2010 | .3010E-02 | .3169E-02 |
| 10.126 | 52.086 | .2370E+05 | 6.123 | 137.5 | 107.0 | 137.6628 | 107.2043 | .1609E-01 | .4524E-02 |
| 10.126 | 58.355 | .2368E+05 | 6.113 | 137.5 | 107.0 | 137.4693 | 107.2422 | .2165E-02 | .3111E-02 |
| 10.084 | 64.618 | .2363E+05 | 6.104 | 137.0 | 107.0 | 137.2134 | 107.2685 | .3792E-02 | .5567E-02 |
| 10.115 | 70.895 | .2387E+05 | 5.994 | 137.0 | 107.5 | 137.0299 | 107.3664 | .1163E-01 | .5037E-02 |
| 10.115 | 1.791 | .2382E+05 | 5.957 | 137.0 | 107.5 | 136.7817 | 107.4759 | .7524E-02 | .2554E-02 |
| 10.107 | 8.162 | .2733E+05 | 5.935 | 136.5 | 107.5 | 136.6678 | 107.5691 | .4217E-02 | .3458E-02 |
| 10.236 | 14.360 | .2801E+05 | 6.136 | 136.5 | 108.0 | 136.4975 | 107.6137 | .3289E-01 | .1007E-00 |
| 10.196 | 20.717 | .2758E+05 | 6.110 | 136.5 | 108.0 | 136.3256 | 107.8470 | .3757E-02 | .5733E-02 |
| 10.236 | 26.966 | .2753E+05 | 6.102 | 136.0 | 108.0 | 136.1411 | 107.9629 | .1703E-02 | .3277E-02 |
| 10.202 | 33.240 | .2742E+05 | 6.132 | 136.0 | 108.0 | 135.9783 | 108.1420 | .2108E-02 | .2531E-02 |
| 10.216 | 39.524 | .2683E+05 | 5.962 | 136.0 | 108.5 | 135.9175 | 108.4008 | .3265E-02 | .3217E-02 |
| 10.179 | 45.802 | .2695E+05 | 5.936 | 136.0 | 108.5 | 135.8367 | 108.6002 | .4253E-02 | .3038E-02 |
| 10.188 | 52.089 | .2679E+05 | 6.028 | 136.0 | 109.0 | 135.7930 | 108.8002 | .4170E-02 | .2308E-02 |
| 10.174 | 58.365 | .1065E+05 | 5.996 | 135.5 | 109.0 | 136.4009 | 109.0713 | .1757E-01 | .4474E-02 |
| 10.208 | 64.624 | .1037E+05 | 6.032 | 135.5 | 109.0 | 136.3447 | 109.2634 | .1703E-01 | .5749E-02 |

ORIGINAL PAGE IS
 OF POOR QUALITY

TM100

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 10.171 | 1.802 | .2770E+05 | 5.089 | 136.0 | 110.0 | 135.7126 | 109.6717 | .3121E-02 | .2105E-02 |
| 10.182 | 8.163 | .2727E+05 | 6.070 | 136.0 | 110.0 | 135.7983 | 109.8883 | .2154E-02 | .4194E-02 |
| 10.219 | 14.363 | .2722E+05 | 6.035 | 136.0 | 110.0 | 135.8337 | 110.0552 | .5003E-02 | .5751E-02 |
| 10.222 | 20.722 | .2725E+05 | 6.043 | 136.0 | 110.0 | 135.9280 | 110.2766 | .4054E-02 | .2737E-02 |
| 10.132 | 26.963 | .2715E+05 | 5.090 | 136.0 | 110.5 | 136.0610 | 110.4403 | .3121E-02 | .2105E-02 |
| 10.132 | 33.254 | .2717E+05 | 5.929 | 136.0 | 110.5 | 136.1901 | 110.6408 | .7064E-03 | .2473E-02 |
| 10.081 | 39.536 | .2694E+05 | 6.003 | 136.5 | 111.0 | 136.3263 | 110.8198 | .2087E-02 | .8495E-02 |
| 10.098 | 45.798 | .2703E+05 | 6.005 | 136.5 | 111.0 | 136.4803 | 110.9555 | .2312E-02 | .2747E-02 |
| 10.121 | 52.068 | .2713E+05 | 6.009 | 136.5 | 111.0 | 136.6449 | 111.0466 | .1734E-02 | .2314E-02 |
| 10.126 | 58.370 | .2391E+05 | 6.068 | 137.0 | 111.0 | 136.8274 | 111.1649 | .2854E-02 | .2982E-02 |
| 10.104 | 64.604 | .2384E+05 | 6.045 | 137.0 | 111.0 | 137.0441 | 111.2687 | .2890E-02 | .2433E-02 |
| 10.171 | 70.701 | .2392E+05 | 6.052 | 137.0 | 111.0 | 137.2769 | 111.3333 | .2315E-01 | .3131E-01 |
| 10.118 | 70.773 | .2384E+05 | 6.086 | 137.0 | 111.0 | 137.2711 | 111.3530 | .5432E-02 | .0673E-02 |
| 10.137 | 1.812 | .2380E+05 | 5.980 | 137.5 | 111.5 | 137.4544 | 111.3523 | .1856E-02 | .7754E-02 |
| 10.165 | 8.173 | .2376E+05 | 5.939 | 137.5 | 111.5 | 137.6732 | 111.3825 | .1201E-02 | .3153E-02 |
| 10.146 | 14.371 | .2385E+05 | 5.979 | 138.0 | 111.5 | 137.9054 | 111.3929 | .3457E-02 | .1477E-02 |
| 10.171 | 20.725 | .2376E+05 | 5.974 | 138.0 | 111.5 | 138.1521 | 111.3567 | .1306E-02 | .1754E-02 |
| 10.160 | 26.967 | .2364E+05 | 5.998 | 138.5 | 111.5 | 138.3394 | 111.3087 | .1543E-02 | .3015E-02 |
| 10.177 | 33.263 | .2367E+05 | 6.035 | 138.5 | 111.0 | 138.5195 | 111.2852 | .2800E-02 | .3489E-02 |
| 10.090 | 39.529 | .2360E+05 | 6.022 | 138.5 | 111.0 | 138.6957 | 111.1669 | .2159E-02 | .4721E-02 |
| 10.067 | 45.828 | .2671E+05 | 5.982 | 139.0 | 111.0 | 138.9086 | 111.0153 | .3400E-02 | .2880E-02 |
| 10.146 | 52.083 | .2661E+05 | 5.953 | 139.0 | 111.0 | 139.1159 | 110.9111 | .1327E-02 | .1965E-02 |
| 10.157 | 58.387 | .2618E+05 | 5.964 | 139.5 | 111.0 | 139.3274 | 110.7755 | .2343E-02 | .3071E-02 |
| 10.090 | 64.607 | .2616E+05 | 5.875 | 139.5 | 110.5 | 139.4508 | 110.6250 | .3602E-02 | .5249E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .02943 | -.00802 | .02564 | .03821 | .01408 | .00426 |
| 1 | .01574 | .04290 | .02526 | -.02848 | -.01854 | -.04422 |
| 2 | -.03503 | -.02746 | -.02217 | -.02252 | -.00245 | -.02868 |
| 3 | .02189 | .03456 | .03763 | .02438 | .05799 | .02724 |
| 4 | .03800 | .01868 | .08251 | .02389 | .08500 | .11470 |
| 5 | .04291 | .04121 | .02506 | -.62601 | -.58890 | .07739 |
| 6 | .06502 | .03984 | .05544 | .05261 | .02358 | .03612 |
| 7 | .05489 | .05223 | .02631 | .03223 | .03412 | .02110 |
| 8 | .04161 | .00000 | .00180 | .00752 | -.00494 | .01426 |
| 9 | .01520 | -.02819 | -.05914 | -.02342 | .01821 | .01022 |

x0= 137.8307 y0= 109.3110 r0= 2.07574964 std.dev.= .11757054

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 13 | 5 | 9 | 18 | 8 | 7 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | delta ri | | | |
|---|---------|---------|----------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | | .00307 | .03747 | .05060 | .02659 | .01652 |
| 1 | .02742 | .05371 | | -.02070 | -.01267 | -.04039 |
| 2 | -.03378 | | -.02657 | -.03004 | -.01249 | -.04199 |
| 3 | .00548 | .01445 | | -.00146 | .02863 | |
| 4 | .00252 | -.01852 | | -.01794 | .04218 | .07934 |
| 5 | -.00394 | -.00659 | -.02336 | | | |
| 6 | | -.00687 | .00965 | .00844 | -.01879 | -.00325 |
| 7 | .01722 | .01693 | -.00667 | .00210 | .00728 | |
| 8 | .01820 | -.02081 | -.01576 | -.00662 | -.01547 | .02205 |
| 9 | .00984 | -.03082 | -.05853 | -.02022 | .02387 | .01756 |

$\mu_0 = 137.8002$ $\nu_0 = 109.3083$ $r_0 = 2.09388995$ $\text{std.dev.} = .02603350$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 4 | 3 | 4 | 10 | 13 | 15 | 11 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 16.0 |
| NDRO: | | | |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-07 |
| Thresholds: | .1830E+06 | .9190E+05 | .7352E+06 |
| Constants: | .34700 | .27500 | .40800 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 19.951 | 8.163 | .1090E+06 | 1.137 | 140.0 | 110.0 | 139.7075 | 110.0742 | .1131E-02 | .9203E-03 |
| 19.937 | 14.365 | .1096E+06 | 1.114 | 140.0 | 110.0 | 139.8040 | 109.8920 | .9175E-03 | .4406E-03 |
| 19.948 | 20.731 | .1155E+06 | 1.110 | 140.0 | 110.0 | 139.8706 | 109.6515 | .5663E-03 | .7949E-03 |
| 19.968 | 26.964 | .9464E+05 | .991 | 140.0 | 109.5 | 139.8874 | 109.4186 | .1245E-02 | .6308E-03 |
| 19.948 | 33.248 | .8232E+05 | 1.177 | 140.0 | 109.0 | 139.8895 | 109.2007 | .1067E-02 | .8568E-03 |
| 19.970 | 39.500 | .8140E+05 | 1.174 | 140.0 | 109.0 | 139.8733 | 108.9951 | .1254E-02 | .1024E-02 |
| 19.970 | 45.817 | .8477E+05 | 1.119 | 140.0 | 109.0 | 139.8492 | 108.7695 | .1247E-02 | .1127E-02 |
| 20.007 | 52.081 | .9342E+05 | .978 | 140.0 | 108.5 | 139.7721 | 108.5730 | .7141E-03 | .1719E-02 |
| 19.979 | 58.370 | .9539E+05 | .966 | 139.5 | 108.5 | 139.6664 | 108.3511 | .1783E-02 | .2168E-02 |
| 20.032 | 64.606 | .1134E+06 | 1.144 | 139.5 | 108.0 | 139.5478 | 108.1585 | .1055E-02 | .1471E-02 |
| 20.049 | 70.866 | .1177E+06 | 1.145 | 139.5 | 108.0 | 139.4063 | 108.0112 | .2519E-03 | .1676E-02 |
| 20.055 | 1.790 | .1323E+06 | 1.187 | 139.0 | 108.0 | 139.2728 | 107.8445 | .1140E-02 | .8159E-03 |
| 20.032 | 8.156 | .1372E+06 | 1.139 | 139.0 | 108.0 | 139.1066 | 107.6457 | .1352E-02 | .2504E-02 |
| 19.928 | 14.380 | .1327E+06 | .994 | 139.0 | 107.5 | 138.9250 | 107.5416 | .5780E-03 | .6561E-03 |
| 19.951 | 20.722 | .1331E+06 | 1.016 | 139.0 | 107.5 | 138.7312 | 107.4367 | .1261E-02 | .1549E-02 |
| 19.959 | 26.968 | .1194E+06 | 1.142 | 138.5 | 107.0 | 138.5382 | 107.3406 | .9301E-03 | .3418E-02 |
| 19.934 | 33.270 | .1133E+06 | 1.217 | 138.0 | 107.0 | 138.2910 | 107.2369 | .1919E-02 | .1421E-02 |
| 19.954 | 39.516 | .1160E+06 | 1.182 | 138.0 | 107.0 | 138.0796 | 107.1968 | .1759E-02 | .2201E-02 |
| 19.903 | 45.829 | .1189E+06 | 1.202 | 138.0 | 107.0 | 137.8552 | 107.1693 | .1108E-02 | .1495E-02 |
| 19.937 | 52.080 | .1132E+06 | 1.141 | 137.5 | 107.0 | 137.6661 | 107.1870 | .1109E-02 | .4248E-02 |
| 19.903 | 58.373 | .1139E+06 | 1.143 | 137.5 | 107.0 | 137.4638 | 107.2236 | .5710E-03 | .1443E-02 |
| 19.970 | 64.610 | .1152E+06 | 1.171 | 137.0 | 107.0 | 137.2196 | 107.2654 | .2256E-02 | .2646E-02 |
| 19.973 | 70.880 | .1204E+06 | 1.174 | 137.0 | 107.0 | 136.9950 | 107.3579 | .3154E-02 | .1504E-02 |
| 19.976 | 1.788 | .1272E+06 | .999 | 137.0 | 107.5 | 136.7751 | 107.4688 | .1901E-02 | .2109E-02 |
| 19.903 | 8.191 | .1196E+06 | .970 | 136.5 | 107.5 | 136.6257 | 107.5757 | .9467E-03 | .1065E-02 |
| 20.032 | 14.370 | .1230E+06 | 1.131 | 136.5 | 108.0 | 136.4503 | 107.6772 | .9366E-03 | .1569E-02 |
| 20.080 | 20.731 | .1292E+06 | 1.222 | 136.0 | 108.0 | 136.2015 | 107.8520 | .1576E-02 | .1775E-02 |
| 20.041 | 26.972 | .1266E+06 | 1.175 | 136.0 | 108.0 | 136.1421 | 108.0115 | .1302E-02 | .1954E-02 |
| 20.074 | 33.236 | .1186E+06 | 1.172 | 136.0 | 108.0 | 135.9927 | 108.2008 | .7296E-03 | .1899E-02 |
| 20.012 | 39.538 | .9426E+05 | 1.003 | 136.0 | 108.5 | 135.9019 | 108.3955 | .1946E-02 | .7470E-03 |
| 20.010 | 45.802 | .9679E+05 | .984 | 136.0 | 108.5 | 135.8145 | 108.5895 | .7466E-03 | .7701E-03 |
| 19.987 | 52.057 | .9557E+05 | 1.129 | 136.0 | 109.0 | 135.7666 | 108.7938 | .2350E-02 | .2200E-02 |
| 19.993 | 58.377 | .8372E+05 | 1.172 | 136.0 | 109.0 | 135.7067 | 108.9973 | .1012E-02 | .1823E-02 |
| 19.970 | 64.631 | .8424E+04 | 1.108 | 135.5 | 109.0 | 135.7295 | 109.2284 | .1461E-02 | .1388E-02 |
| 20.024 | 70.880 | .1007E+06 | .983 | 136.0 | 109.5 | 135.7379 | 109.4548 | .8621E-03 | .5055E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 19.954 | 8.160 | .1071E+06 | 1.139 | 136.0 | 110.0 | 135.7595 | 109.9338 | .1071E-02 | .1344E-02 |
| 19.979 | 14.387 | .1063E+06 | 1.153 | 136.0 | 110.0 | 135.8060 | 110.0967 | .1145E-02 | .9277E-03 |
| 19.951 | 20.767 | .1093E+06 | 1.116 | 136.0 | 110.0 | 135.9075 | 110.3132 | .1298E-02 | .9449E-02 |
| 19.909 | 26.967 | .7512E+05 | .996 | 136.0 | 110.5 | 136.0237 | 110.4567 | .1008E-02 | .1234E-02 |
| 19.920 | 33.284 | .8538E+05 | .948 | 136.0 | 110.5 | 136.1517 | 110.6625 | .1291E-02 | .1530E-02 |
| 19.954 | 39.532 | .9502E+05 | 1.133 | 136.0 | 111.0 | 136.2862 | 110.8066 | .1308E-02 | .4998E-03 |
| 19.984 | 45.830 | .1013E+06 | 1.066 | 136.5 | 111.0 | 136.4611 | 110.9530 | .3487E-03 | .9409E-03 |
| 19.937 | 52.121 | .1073E+06 | 1.065 | 136.5 | 111.0 | 136.6371 | 111.0486 | .1587E-02 | .1456E-02 |
| 19.970 | 58.400 | .1189E+06 | 1.138 | 137.0 | 111.0 | 136.8041 | 111.1564 | .7471E-03 | .9870E-03 |
| 19.858 | 64.635 | .1176E+06 | 1.119 | 137.0 | 111.0 | 137.0208 | 111.2682 | .8087E-03 | .1254E-02 |
| 19.951 | 70.898 | .1167E+06 | 1.110 | 137.0 | 111.0 | 137.2409 | 111.3531 | .7971E-03 | .2358E-02 |
| 19.923 | 1.816 | .1188E+06 | .966 | 137.5 | 111.5 | 137.4574 | 111.3746 | .7067E-03 | .5310E-03 |
| 19.911 | 8.205 | .1252E+06 | .990 | 137.5 | 111.5 | 137.6723 | 111.4078 | .1083E-01 | .1881E-02 |
| 19.954 | 14.398 | .1244E+06 | .996 | 138.0 | 111.5 | 137.8880 | 111.4038 | .1004E-02 | .4168E-03 |
| 19.956 | 20.759 | .1192E+06 | .995 | 138.0 | 111.5 | 138.1385 | 111.3716 | .1179E-02 | .8229E-03 |
| 19.987 | 26.995 | .1211E+06 | 1.040 | 138.5 | 111.5 | 138.3268 | 111.3434 | .4844E-02 | .3168E-01 |
| 19.937 | 33.279 | .1144E+06 | 1.086 | 138.5 | 111.0 | 138.5313 | 111.2964 | .7523E-03 | .1035E-02 |
| 19.965 | 39.566 | .1213E+06 | 1.138 | 139.0 | 111.0 | 138.6882 | 111.1703 | .1460E-02 | .1088E-02 |
| 19.900 | 45.777 | .1146E+06 | 1.108 | 139.0 | 111.0 | 138.8956 | 111.0497 | .9398E-03 | .1016E-02 |
| 19.923 | 52.133 | .1079E+06 | 1.079 | 139.0 | 111.0 | 139.1157 | 110.9388 | .5566E-03 | .6631E-03 |
| 19.979 | 58.390 | .9505E+05 | 1.095 | 139.0 | 111.0 | 139.2864 | 110.7881 | .8370E-03 | .1685E-02 |
| 19.895 | 64.671 | .8571E+05 | .923 | 139.5 | 110.5 | 139.4221 | 110.6389 | .1843E-02 | .3750E-02 |
| 19.945 | 70.905 | .7058E+05 | .877 | 139.5 | 110.5 | 139.5508 | 110.4550 | .7671E-03 | .2616E-03 |
| 19.965 | 1.827 | .9863E+05 | 1.082 | 139.5 | 110.0 | 139.6548 | 110.2959 | .1026E-02 | .2163E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.03535 | -.00351 | .00798 | -.00085 | .00074 | .00484 |
| 1 | .02614 | .01132 | .00316 | -.00338 | -.03190 | -.02114 |
| 2 | .01465 | -.00592 | -.01133 | -.00157 | .02195 | .02370 |
| 3 | .03208 | .01676 | .00162 | .01233 | -.00260 | -.00307 |
| 4 | -.02152 | .00174 | -.02654 | -.01192 | .00241 | -.01133 |
| 5 | -.00943 | -.02022 | -.00132 | -.04532 | .00030 | .00030 |
| 6 | .01871 | .02931 | .02884 | .00219 | .02142 | .01210 |
| 7 | .01129 | -.01521 | -.00763 | .00361 | .01586 | -.00812 |
| 8 | .00209 | -.00256 | -.00751 | .00484 | .02207 | .03223 |
| 9 | -.03674 | .00181 | .00506 | .00615 | .00155 | .01025 |

x0= 137.7871. y0= 109.3046 r0= 2.10424566 std.dev.= .01690641

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 5 | 11 | 13 | 30 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | -.03508 | -.00327 | .00820 | -.00065 | .00092 | .00423 |
| 1 | .02626 | .01141 | .00322 | -.00334 | -.03189 | .02115 |
| 2 | .01461 | -.00598 | -.01141 | -.00165 | .02185 | .02350 |
| 3 | .03196 | .01664 | .00149 | .01225 | -.00272 | -.00818 |
| 4 | -.02163 | .00164 | -.02662 | -.01199 | .00236 | -.01134 |
| 5 | -.00944 | -.02020 | -.00128 | -.04525 | .00079 | .00037 |
| 6 | .01887 | .02949 | .02903 | .00241 | .02167 | .01237 |
| 7 | .01158 | -.01490 | -.00731 | .00395 | .01622 | -.00775 |
| 8 | | -.00218 | -.00713 | | .02245 | -.03186 |
| 9 | -.03637 | .00216 | .00540 | .00647 | .00186 | .01053 |

x0= 137.7870 y0= 109.3043 r0= 2.10411882 std.dev.= .01717975

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 5 | 11 | 13 | 28 | 2 |

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NDR0:
Integration delay: .1160E+00
Threshold: .1838E+06

Coarse 1.0 .1160E+00
Fine 1.0 .4564E+00
Track 64.0 .1344E-02
.7352E+06

Constants: .34700 .27500 .40800 .29800
Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark | star | reference | | position | | standard deviation | |
|--------|--------|-----------|-------|-----------|---------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| 19.982 | 1.784 | .4398E+05 | 2.874 | 139.5 | 110.0 | 139.6618 | 110.2989 | .1294E-02 | .1938E-02 |
| 19.984 | 8.161 | .4683E+05 | 2.915 | 140.0 | 110.0 | 139.7188 | 110.0703 | .1485E-02 | .1717E-02 |
| 19.984 | 14.356 | .4717E+05 | 2.898 | 140.0 | 110.0 | 139.8167 | 109.8901 | .7616E-03 | .7445E-03 |
| 19.976 | 20.725 | .4808E+05 | 2.883 | 140.0 | 109.5 * | 139.8825 | 109.6485 | .8565E-02 | .1004E-01 |
| 19.993 | 26.952 | .4344E+05 | 2.787 | 140.0 | 109.5 | 139.8978 | 109.4215 | .1618E-02 | .9015E-03 |
| 19.954 | 33.263 | .4105E+05 | 2.952 | 140.0 | 109.0 | 139.8947 | 109.1910 | .1656E-02 | .1398E-02 |
| 19.990 | 39.511 | .4048E+05 | 2.946 | 140.0 | 109.0 | 139.8802 | 108.9863 | .1196E-02 | .1716E-02 |
| 20.035 | 45.764 | .4095E+05 | 2.901 | 140.0 | 109.0 | 139.8577 | 108.7680 | .1146E-02 | .1062E-02 |
| 19.990 | 52.982 | .4208E+05 | 2.766 | 140.0 | 108.5 | 139.7814 | 108.5737 | .2146E-02 | .1278E-02 |
| 19.962 | 58.177 | .4174E+05 | 2.776 | 139.5 | 108.5 * | 139.6762 | 108.3576 | .8767E-02 | .1828E-02 |
| 20.091 | 64.582 | .4691E+05 | 2.932 | 139.5 | 108.0 | 139.5577 | 108.1610 | .6656E-03 | .6004E-03 |
| 20.024 | 70.848 | .4781E+05 | 2.930 | 139.5 | 108.0 | 139.4145 | 108.0066 | .9526E-03 | .6663E-03 |
| 20.063 | 1.794 | .5138E+05 | 2.968 | 139.0 | 103.0 | 139.2804 | 107.8386 | .1058E-02 | .1601E-02 |
| 19.973 | 8.148 | .5246E+05 | 2.922 | 139.0 | 108.0 | 139.1159 | 107.6379 | .1277E-02 | .1830E-02 |
| 19.937 | 14.361 | .5055E+05 | 2.785 | 139.0 | 107.5 | 138.9281 | 107.5462 | .4175E-03 | .7954E-03 |
| 19.909 | 20.712 | .5090E+05 | 2.809 | 139.0 | 107.5 | 138.7325 | 107.4409 | .1002E-02 | .8464E-03 |
| 19.956 | 26.936 | .4674E+05 | 2.929 | 138.5 | 107.0 | 138.5453 | 107.3467 | .1533E-02 | .2342E-02 |
| 19.923 | 33.232 | .4585E+05 | 2.937 | 138.5 | 107.0 | 138.3291 | 107.2690 | .9772E-03 | .1269E-02 |
| 19.925 | 39.519 | .4542E+05 | 2.954 | 138.0 | 107.0 | 138.0904 | 107.1987 | .1701E-02 | .1158E-02 |
| 19.903 | 45.781 | .4588E+05 | 2.972 | 138.0 | 107.0 | 137.8585 | 107.1720 | .1265E-02 | .1539E-02 |
| 19.925 | 52.065 | .4450E+05 | 2.921 | 137.5 | 107.0 | 137.6694 | 107.1838 | .9501E-03 | .8019E-03 |
| 19.937 | 58.373 | .4452E+05 | 2.927 | 137.5 | 107.0 | 137.4706 | 107.2254 | .4534E-03 | .1383E-02 |
| 19.875 | 64.603 | .4489E+05 | 2.945 | 137.0 | 107.0 | 137.2343 | 107.2680 | .1257E-02 | .1977E-02 |
| 19.889 | 70.848 | .4789E+05 | 2.824 | 137.0 | 107.5 | 137.0234 | 107.3657 | .1033E-01 | .5226E-02 |
| 19.875 | 1.795 | .4756E+05 | 2.787 | 137.0 | 107.5 | 136.7845 | 107.4711 | .1301E-02 | .8871E-03 |
| 19.892 | 8.148 | .4756E+05 | 2.765 | 136.5 | 107.5 | 136.6343 | 107.5715 | .1315E-02 | .1086E-02 |
| 20.026 | 14.369 | .4920E+05 | 2.921 | 136.5 | 108.0 | 136.4588 | 107.6687 | .5694E-03 | .1070E-02 |
| 19.996 | 20.721 | .4945E+05 | 2.950 | 136.5 | 108.0 * | 136.3112 | 107.8454 | .3384E-02 | .4811E-02 |
| 20.032 | 26.965 | .4994E+05 | 2.941 | 136.0 | 108.0 | 136.1551 | 108.0019 | .1211E-02 | .1558E-02 |
| 19.998 | 33.253 | .4895E+05 | 2.944 | 136.0 | 108.0 | 136.0025 | 108.1881 | .1176E-02 | .1719E-02 |
| 19.934 | 39.500 | .4171E+05 | 2.789 | 136.0 | 108.5 | 135.9112 | 108.3880 | .6384E-03 | .6044E-03 |
| 19.962 | 45.798 | .4164E+05 | 2.768 | 136.0 | 108.5 | 135.8259 | 108.5935 | .1019E-02 | .1549E-02 |
| 19.948 | 52.071 | .4059E+05 | 2.905 | 136.0 | 109.0 | 135.7761 | 108.7813 | .5556E-03 | .8097E-03 |
| 19.965 | 58.362 | .4064E+05 | 2.941 | 136.0 | 109.0 | 135.7136 | 108.9868 | .7047E-03 | .1104E-02 |
| 19.973 | 64.594 | .5521E+05 | 2.874 | 135.5 | 109.0 | 135.9115 | 109.2287 | .3807E-02 | .1229E-02 |

ORIGINAL PAGE IS
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| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 19.917 | 1.802 | .4865E+05 | 2.895 | 136.0 | 110.0 | 135.7300 | 109.6858 | .1547E-02 | .1105E-02 |
| 19.956 | 8.152 | .4661E+05 | 2.917 | 136.0 | 110.0 | 135.7703 | 109.9179 | .1023E-02 | .1692E-02 |
| 19.976 | 14.370 | .4508E+05 | 2.935 | 136.0 | 110.0 | 135.8163 | 110.0833 | .6448E-03 | .1215E-02 |
| 19.911 | 20.721 | .4633E+05 | 2.895 | 136.0 | 110.0 | 135.9163 | 110.3057 | .1298E-02 | .8714E-03 |
| 19.869 | 26.936 | .3934E+05 | 2.687 | 136.0 | 110.5 | 136.0358 | 110.4500 | .7207E-03 | .1358E-02 |
| 19.895 | 33.216 | .4120E+05 | 2.732 | 136.0 | 110.5 | 136.1646 | 110.6499 | .1223E-02 | .8139E-03 |
| 19.889 | 39.521 | .4264E+05 | 2.850 | 136.5 | 111.0 | 136.3131 | 110.8031 | .1756E-02 | .4110E-02 |
| 19.883 | 45.806 | .4427E+05 | 2.848 | 136.5 | 111.0 | 136.4728 | 110.9438 | .7394E-03 | .1242E-02 |
| 19.900 | 52.086 | .4531E+05 | 2.845 | 136.5 | 111.0 | 136.6449 | 111.0374 | .1571E-02 | .1105E-02 |
| 19.917 | 58.361 | .4526E+05 | 2.908 | 137.0 | 111.0 | 136.8112 | 111.1424 | .6870E-03 | .9378E-03 |
| 19.897 | 64.645 | .4512E+05 | 2.887 | 137.0 | 111.0 | 137.0305 | 111.2562 | .1274E-02 | .1361E-02 |
| 19.861 | 70.856 | .4497E+05 | 2.887 | 137.0 | 111.0 | 137.2513 | 111.3446 | .8808E-03 | .9120E-03 |
| 19.920 | 1.809 | .4519E+05 | 2.767 | 137.5 | 111.5 | 137.4681 | 111.3690 | .7267E-03 | .1089E-02 |
| 19.875 | 8.172 | .4717E+05 | 2.801 | 138.0 | 111.5 | 137.6764 | 111.4033 | .8382E-02 | .1759E-02 |
| 19.895 | 14.362 | .4653E+05 | 2.787 | 138.0 | 111.5 | 137.8986 | 111.3984 | .8554E-03 | .1145E-02 |
| 19.858 | 20.723 | .4558E+05 | 2.787 | 138.0 | 111.5 | 138.1483 | 111.3641 | .1065E-02 | .3094E-03 |
| 19.895 | 26.962 | .4456E+05 | 2.800 | 138.5 | 111.5 | 138.3437 | 111.3157 | .9971E-03 | .7638E-03 |
| 19.931 | 33.215 | .4471E+05 | 2.866 | 138.5 | 111.0 | 138.5354 | 111.2898 | .9753E-03 | .1645E-02 |
| 19.928 | 39.525 | .4890E+05 | 2.906 | 139.0 | 111.0 | 138.6958 | 111.1614 | .6373E-03 | .1693E-02 |
| 19.909 | 45.820 | .4717E+05 | 2.869 | 139.0 | 111.0 | 138.9083 | 111.0431 | .1339E-02 | .2904E-02 |
| 19.937 | 52.079 | .4559E+05 | 2.843 | 139.0 | 111.0 | 139.1242 | 110.9316 | .1323E-02 | .1298E-02 |
| 19.914 | 58.367 | .4220E+05 | 2.840 | 139.5 | 111.0 | 139.2941 | 110.7860 | .1549E-02 | .3228E-02 |
| 19.917 | 64.594 | .4065E+05 | 2.721 | 139.5 | 110.5 | 139.4309 | 110.6368 | .1340E-02 | .4379E-02 |
| 19.990 | 70.737 | .3780E+05 | 2.673 | 139.5 | 110.5 | 139.5548 | 110.4621 | .6383E-03 | .1149E-02 |

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| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .01272 | -.03246 | .00127 | .01162 | .00161 | -.00196 |
| 1 | .00429 | .02611 | .01128 | .00073 | -.00417 | -.02272 |
| 2 | -.01802 | -.02197 | -.01255 | -.01778 | -.00678 | .00153 |
| 3 | .02420 | .03184 | .02339 | .00380 | .01260 | -.01221 |
| 4 | -.00463 | -.01164 | .01531 | -.01506 | -.00108 | .01703 |
| 5 | .00073 | -.00009 | -.00757 | .01280 | -.20726 | .01307 |
| 6 | .00816 | .02403 | .03491 | .03733 | .00819 | .02212 |
| 7 | .01568 | .01390 | -.01260 | -.00816 | .00274 | .01745 |
| 8 | -.00422 | .00716 | .00076 | -.00682 | -.01240 | .02111 |
| 9 | -.03451 | -.03474 | .00099 | .00700 | .00847 | .00443 |

x0= 137.8012 r0= 109.3015 r0= 2.09840560 std.dev.= .03140308

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 0 | 6 | 8 | 19 | 26 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .01341 | -.03179 | .00192 | .00100 | .00218 | -.00145 |
| 1 | .00475 | .02651 | .01162 | -.01796 | -.00397 | -.02960 |
| 2 | -.01797 | -.02194 | -.01266 | .00325 | -.00702 | .00121 |
| 3 | .02381 | .03138 | .02788 | -.01579 | .01199 | .01631 |
| 4 | -.00531 | -.01734 | .01460 | .01218 | -.20734 | .01254 |
| 5 | .00003 | -.00077 | -.00823 | .03705 | .00797 | .02198 |
| 6 | .00769 | .02363 | .03456 | -.00802 | .00296 | .01774 |
| 7 | .01562 | .01391 | -.01253 | -.00628 | -.01182 | .02173 |
| 8 | -.00386 | .00758 | .00124 | .00770 | .00917 | .00514 |
| 9 | -.03386 | -.03406 | .00168 | | | |

x0= 137.8007 y0= 109.3010 r0= 2.09841537 std.dev.= .03187319

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 0 | 6 | 8 | 17 | 26 | 2 |

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Deck 12-A Track data file IDATA06

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 192.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .7974E+00 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .34700 | .27500 | .40800 | .29800 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|---------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 19.987 | 8.155 | .5662E+05 | 6.087 | 139.5 | 110.0 | 139.7294 | 110.0318 | .6111E-02 | .5970E-02 |
| 20.004 | 14.361 | .5723E+05 | 6.097 | 140.0 | 110.0 | 139.7959 | 109.9071 | .7389E-02 | .7510E-02 |
| 19.984 | 20.718 | .5749E+05 | 6.111 | 140.0 | 109.5 * | 139.8383 | 109.6860 | .1721E-01 | .5654E-02 |
| 20.046 | 26.973 | .5738E+05 | 6.085 | 140.0 | 109.5 | 139.8686 | 109.4103 | .5229E-02 | .2538E-02 |
| 19.998 | 33.252 | .5724E+05 | 6.240 | 140.0 | 109.0 | 139.8593 | 109.2003 | .5290E-02 | .4900E-02 |
| 20.007 | 39.535 | .5720E+05 | 6.238 | 140.0 | 109.0 | 139.8506 | 108.9480 | .7451E-02 | .6948E-02 |
| 20.007 | 45.802 | .5718E+05 | 6.195 | 140.0 | 109.0 | 139.8343 | 108.7066 | .9302E-02 | .6440E-02 |
| 20.015 | 52.079 | .5650E+05 | 5.993 | 140.0 | 103.5 | 139.8048 | 108.5750 | .1182E-01 | .7320E-02 |
| 20.001 | 58.361 | .5570E+05 | 5.945 | 139.5 | 108.5 | 139.5971 | 108.3692 | .3076E-02 | .4622E-02 |
| 20.032 | 64.629 | .5642E+05 | 6.153 | 139.5 | 108.0 | 139.4932 | 108.1619 | .2749E-02 | .5922E-02 |
| | | | | | | | | | |
| 20.083 | 70.880 | .5654E+05 | 6.161 | 139.5 | 108.0 | 139.3505 | 108.0125 | .3965E-02 | .4181E-02 |
| 20.069 | 1.797 | .5705E+05 | 6.160 | 139.0 | 108.0 | 139.1977 | 107.8339 | .5655E-02 | .4745E-02 |
| 19.928 | 8.161 | .5740E+05 | 6.140 | 139.0 | 107.5 * | 139.0502 | 107.6984 | .1336E-01 | .3225E-01 |
| 19.883 | 14.364 | .5741E+05 | 6.105 | 139.0 | 107.5 | 138.8627 | 107.5607 | .3068E-02 | .4774E-02 |
| 19.925 | 20.717 | .5755E+05 | 6.144 | 139.0 | 107.5 | 138.6435 | 107.4470 | .4846E-02 | .6836E-02 |
| 19.942 | 26.926 | .5582E+05 | 6.183 | 138.5 | 107.5 | 138.5135 | 107.3669 | .3825E-02 | .1451E-02 |
| 19.951 | 33.272 | .5584E+05 | 6.343 | 138.5 | 107.0 | 138.2581 | 107.4161 | .1209E-01 | .2239E-01 |
| 19.948 | 39.515 | .5540E+05 | 6.343 | 138.0 | 107.0 | 138.1431 | 107.2815 | .8657E-02 | .9485E-02 |
| 19.911 | 45.812 | .5533E+05 | 6.365 | 138.0 | 107.0 | 137.8534 | 107.2467 | .4713E-02 | .3557E-02 |
| 19.934 | 52.080 | .5524E+05 | 6.301 | 137.5 | 107.0 * | 137.6495 | 107.2380 | .2951E-01 | .2510E-01 |
| | | | | | | | | | |
| 19.937 | 58.364 | .5517E+05 | 6.262 | 137.5 | 107.0 | 137.4441 | 107.2876 | .4595E-02 | .6234E-02 |
| 19.914 | 64.623 | .5500E+05 | 6.238 | 137.0 | 107.0 | 137.1606 | 107.2885 | .6653E-02 | .9177E-02 |
| 19.931 | 70.880 | .5518E+05 | 6.113 | 137.0 | 107.5 | 136.9910 | 107.3807 | .7405E-02 | .6496E-02 |
| 19.948 | 1.801 | .5521E+05 | 6.082 | 137.0 | 107.5 | 136.7340 | 107.4886 | .6274E-02 | .3503E-02 |
| 19.948 | 8.149 | .5760E+05 | 6.094 | 136.5 | 107.5 | 136.6681 | 107.5704 | .3713E-02 | .3795E-02 |
| 20.085 | 14.367 | .5782E+05 | 6.249 | 136.5 | 108.0 | 136.4687 | 107.6139 | .1885E-01 | .7245E-01 |
| 20.066 | 20.725 | .5748E+05 | 6.192 | 136.5 | 103.0 * | 136.2935 | 107.8337 | .2051E-01 | .3601E-01 |
| 20.038 | 26.965 | .5711E+05 | 6.125 | 136.0 | 108.0 | 136.0783 | 107.9162 | .2761E-02 | .4235E-02 |
| 20.063 | 33.274 | .5704E+05 | 6.125 | 136.0 | 103.0 | 135.9238 | 108.1033 | .3899E-02 | .5734E-02 |
| 20.043 | 39.551 | .5653E+05 | 6.007 | 136.0 | 103.5 | 135.8882 | 108.4302 | .4912E-02 | .3259E-02 |
| | | | | | | | | | |
| 20.004 | 45.832 | .5653E+05 | 5.991 | 136.0 | 103.5 | 135.8104 | 108.6204 | .4476E-02 | .3300E-02 |
| 19.990 | 52.101 | .5697E+05 | 6.133 | 136.0 | 109.0 | 135.7331 | 108.8131 | .2103E-02 | .6053E-02 |
| 19.979 | 58.349 | .2974E+05 | 6.351 | 135.5 | 109.0 | 135.6548 | 108.9980 | .4448E+00 | .2613E-01 |
| 19.976 | 64.647 | .2972E+05 | 6.377 | 135.5 | 109.0 | 135.5918 | 109.2997 | .1473E-01 | .2533E-01 |
| 19.959 | 70.793 | .3000E+05 | 6.166 | 135.5 | 109.5 | 135.3840 | 109.5993 | .1761E-00 | .1944E-01 |

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| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 19.010 | 3.151 | .5703E+05 | 6.149 | 136.0 | 110.0 | 135.7779 | 109.8121 | .5930E-02 | .7344E-02 |
| 20.024 | 14.379 | .5690E+05 | 6.155 | 136.0 | 110.0 | 135.8148 | 109.9683 | .4085E-02 | .2932E-02 |
| 19.987 | 20.749 | .5690E+05 | 6.121 | 136.0 | 110.0 | 135.9127 | 110.2000 | .2026E-02 | .4660E-02 |
| 19.937 | 26.957 | .5736E+05 | 6.041 | 136.0 | 110.5 | 136.1010 | 110.4211 | .4175E-02 | .5027E-02 |
| 19.951 | 33.267 | .5744E+05 | 6.094 | 136.0 | 110.5 | 136.2399 | 110.6379 | .3526E-02 | .5454E-02 |
| 19.903 | 39.528 | .5667E+05 | 6.109 | 136.5 | 111.0 | 136.2930 | 110.8979 | .4454E-02 | .5802E-02 |
| 19.928 | 45.810 | .5662E+05 | 6.106 | 136.5 | 111.0 | 136.4436 | 111.0361 | .7065E-03 | .4913E-02 |
| 19.925 | 52.102 | .5674E+05 | 6.108 | 136.5 | 111.0 | 136.6157 | 111.1333 | .2073E-02 | .4254E-02 |
| 19.920 | 58.370 | .5493E+05 | 6.188 | 137.0 | 111.0 | 136.8233 | 111.2237 | .7614E-02 | .9502E-02 |
| 19.986 | 64.615 | .5481E+05 | 6.163 | 137.0 | 111.0 | 137.0668 | 111.3307 | .6770E-02 | .8103E-02 |
| 19.937 | 70.823 | .5479E+05 | 6.106 | 137.0 | 111.5 | 137.3078 | 111.3106 | .1303E-01 | .4674E-01 |
| 19.968 | 1.794 | .5476E+05 | 6.019 | 137.5 | 111.5 | 137.4225 | 111.3490 | .3680E-02 | .2754E-02 |
| 19.945 | 8.159 | .5471E+05 | 5.992 | 137.5 | 111.5 | 137.6405 | 111.3822 | .3626E-02 | .2191E-02 |
| 19.875 | 14.359 | .5462E+05 | 6.056 | 138.0 | 111.5 | 137.8955 | 111.4133 | .6634E-02 | .3669E-02 |
| 19.917 | 20.715 | .5450E+05 | 6.045 | 138.0 | 111.5 | 138.1461 | 111.3707 | .1729E-02 | .4232E-02 |
| 19.979 | 26.973 | .5446E+05 | 6.052 | 138.5 | 111.5 | 138.3140 | 111.3259 | .2942E-02 | .4790E-02 |
| 19.925 | 33.265 | .5439E+05 | 6.083 | 138.5 | 111.0 | 138.4821 | 111.3094 | .9720E-02 | .2295E-01 |
| 19.970 | 39.542 | .5438E+05 | 6.071 | 138.5 | 111.0 | 138.6480 | 111.2038 | .3359E-02 | .6572E-02 |
| 19.889 | 45.809 | .5646E+05 | 6.010 | 139.0 | 111.0 | 138.9064 | 111.0523 | .1077E-02 | .4311E-02 |
| 19.911 | 52.091 | .5631E+05 | 5.985 | 139.0 | 111.0 | 139.1038 | 110.9467 | .3188E-02 | .5011E-02 |
| 19.864 | 58.368 | .5567E+05 | 5.994 | 139.5 | 111.0 | 139.3329 | 110.8321 | .4051E-02 | .6783E-02 |
| 19.940 | 64.643 | .5595E+05 | 5.958 | 139.5 | 110.5 | 139.4440 | 110.6561 | .7184E-02 | .1274E-01 |
| 19.906 | 70.827 | .5576E+05 | 5.907 | 139.5 | 110.5 | 139.5601 | 110.4832 | .1703E-02 | .1487E-02 |
| 19.993 | 1.790 | .5673E+05 | 6.125 | 139.5 | 110.0 | 139.6488 | 110.2927 | .1552E-01 | .5027E-01 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .05096 | .07647 | .06897 | .07048 | .06339 | .06493 |
| 1 | .12527 | .13877 | .03149 | .04764 | .02210 | .03880 |
| 2 | .03518 | .03879 | .03281 | .05488 | -.07125 | .03433 |
| 3 | .03430 | .04283 | .01369 | .07344 | .04046 | .05181 |
| 4 | -.00271 | .02048 | .03716 | .13054 | .14923 | .01735 |
| 5 | .01502 | .03198 | | | | .02590 |
| 6 | -.01907 | -.01137 | -.01603 | -.07139 | -.05074 | .02200 |
| 7 | .10052 | .08222 | .06022 | .06611 | .01859 | -.00250 |
| 8 | .00717 | .04046 | .03089 | .02605 | .06239 | .02977 |
| 9 | .02633 | .06034 | .13368 | .10266 | .09746 | .07094 |

x0= 137.7500 y0= 109.3282 r0= 2.04972386 std.dev.= .32032344

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 31 | 4 | 10 | 5 | 7 | 3 | 0 |

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| | 1 | 2 | delta r1 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.01042 | .01452 | | .00706 | -.00033 | .02107 |
| 1 | .06156 | | -.03147 | -.01456 | -.03925 | .02933 |
| 2 | | -.01875 | -.02296 | .00026 | | .01718 |
| 3 | -.01466 | | -.03154 | .03072 | -.00057 | .01321 |
| 4 | -.04039 | | | .10590 | .11817 | .01207 |
| 5 | -.01338 | .00443 | | | | |
| 6 | -.04501 | -.03747 | -.04261 | -.09886 | -.07933 | .06226 |
| 7 | .06963 | .05009 | .02653 | .03042 | | -.04109 |
| 8 | -.03338 | -.00239 | -.01426 | -.02068 | | -.02016 |
| 9 | -.02618 | .00604 | .07755 | | .03862 | |

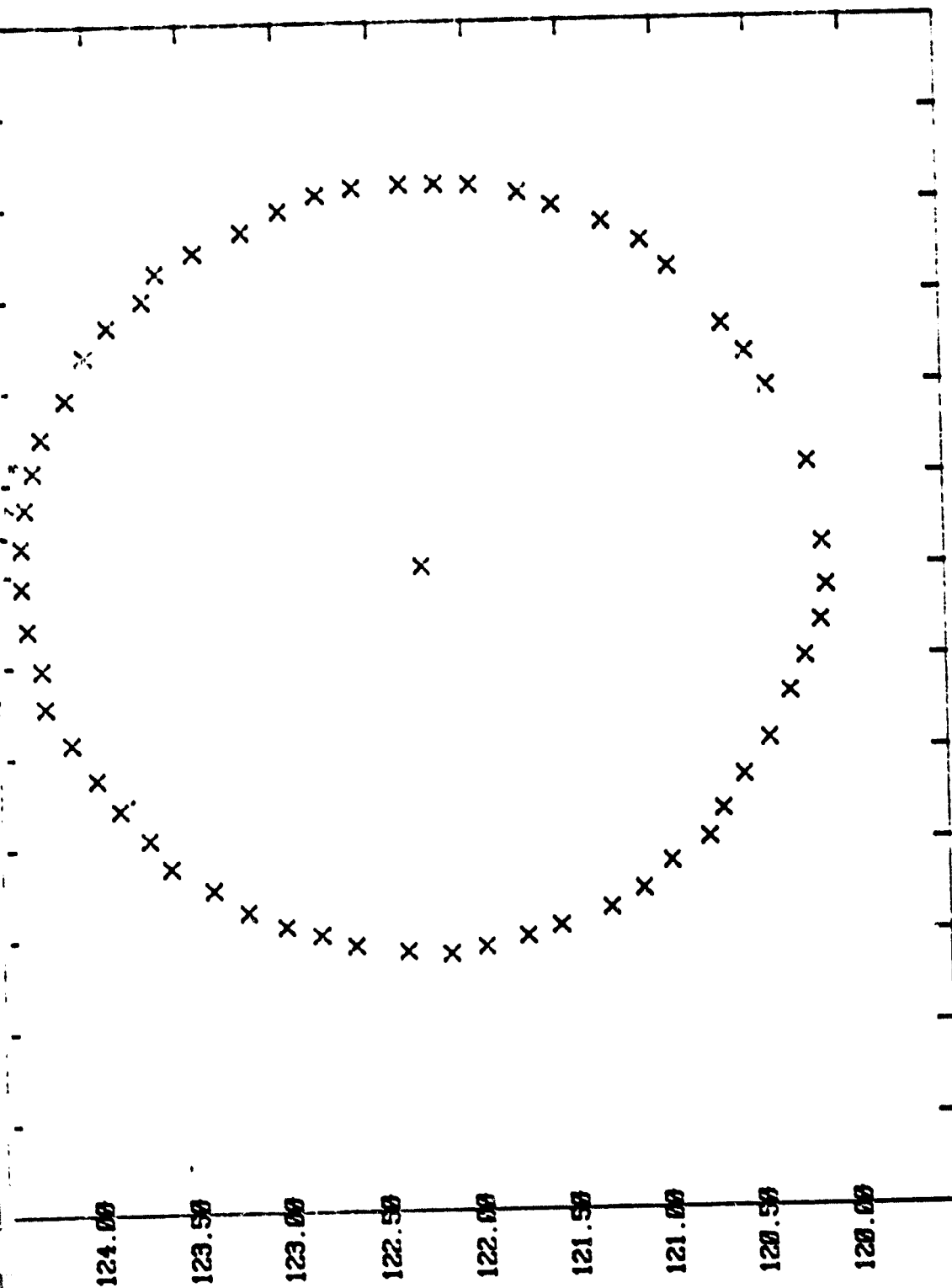
x0= 137.7687 y0= 109.3249 r0= 2.09459376 std.dev.= .04348783

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 9 | 4 | 8 | 7 | 10 | 7 | 15 |

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OF POOR QUALITY

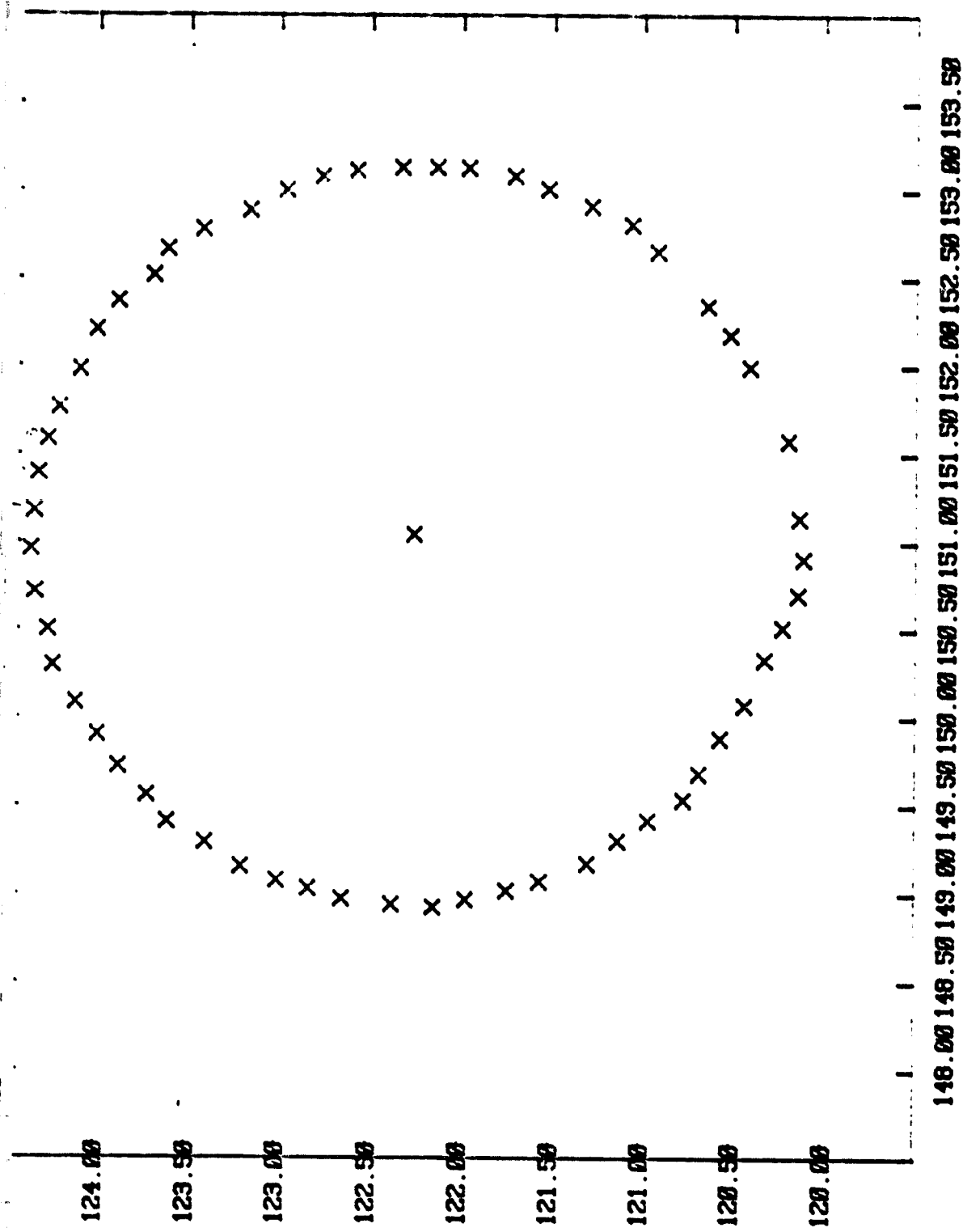
TM91-04



148.00 148.50 149.00 149.50 150.00 150.50 151.00 151.50 152.00 152.50 153.00 153.50

POSITION #2 S.D= 1.975%

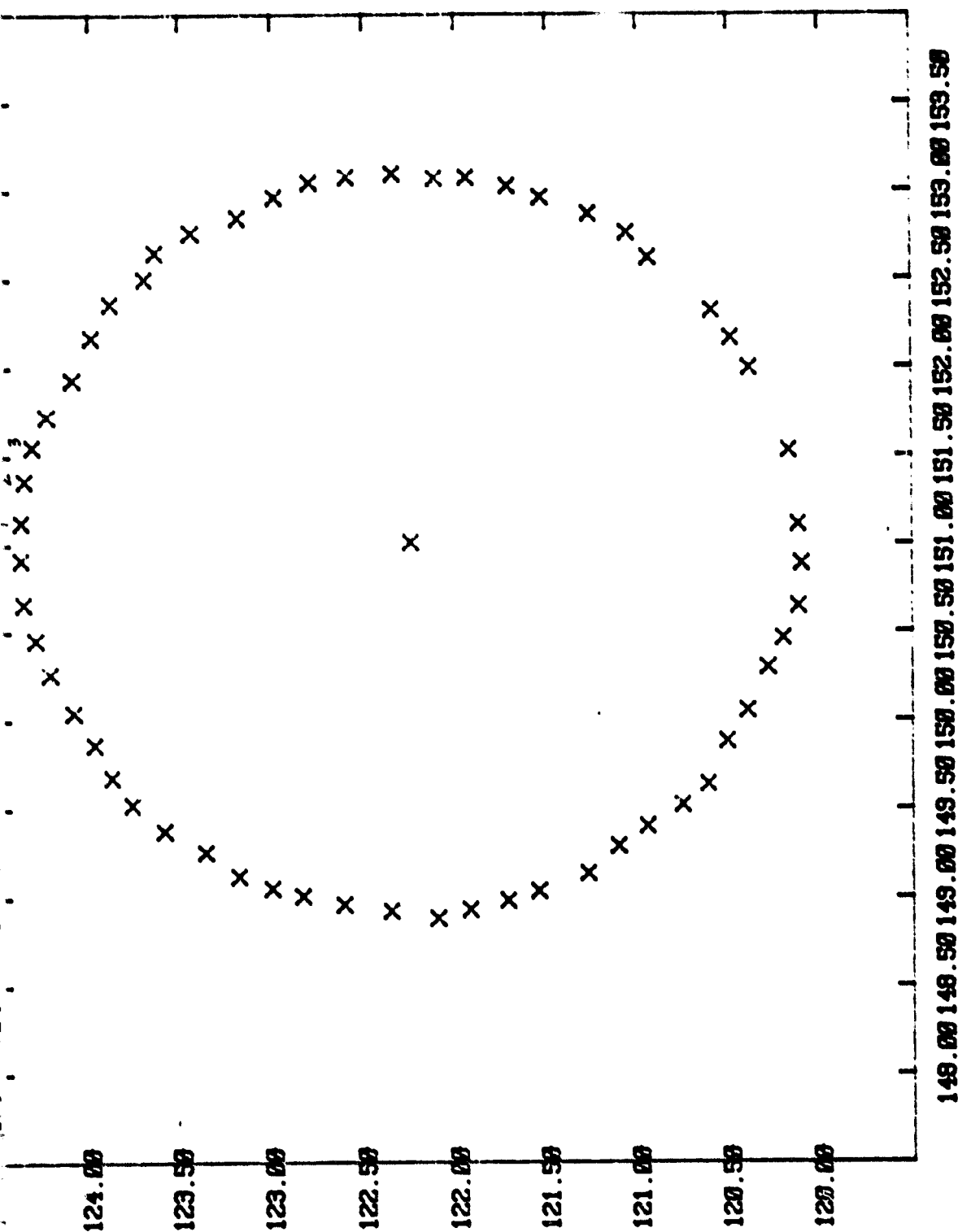
12-A-11 F2.8 -.5M 2 K=.298.255.367.302 100% 0°C



TR81-24

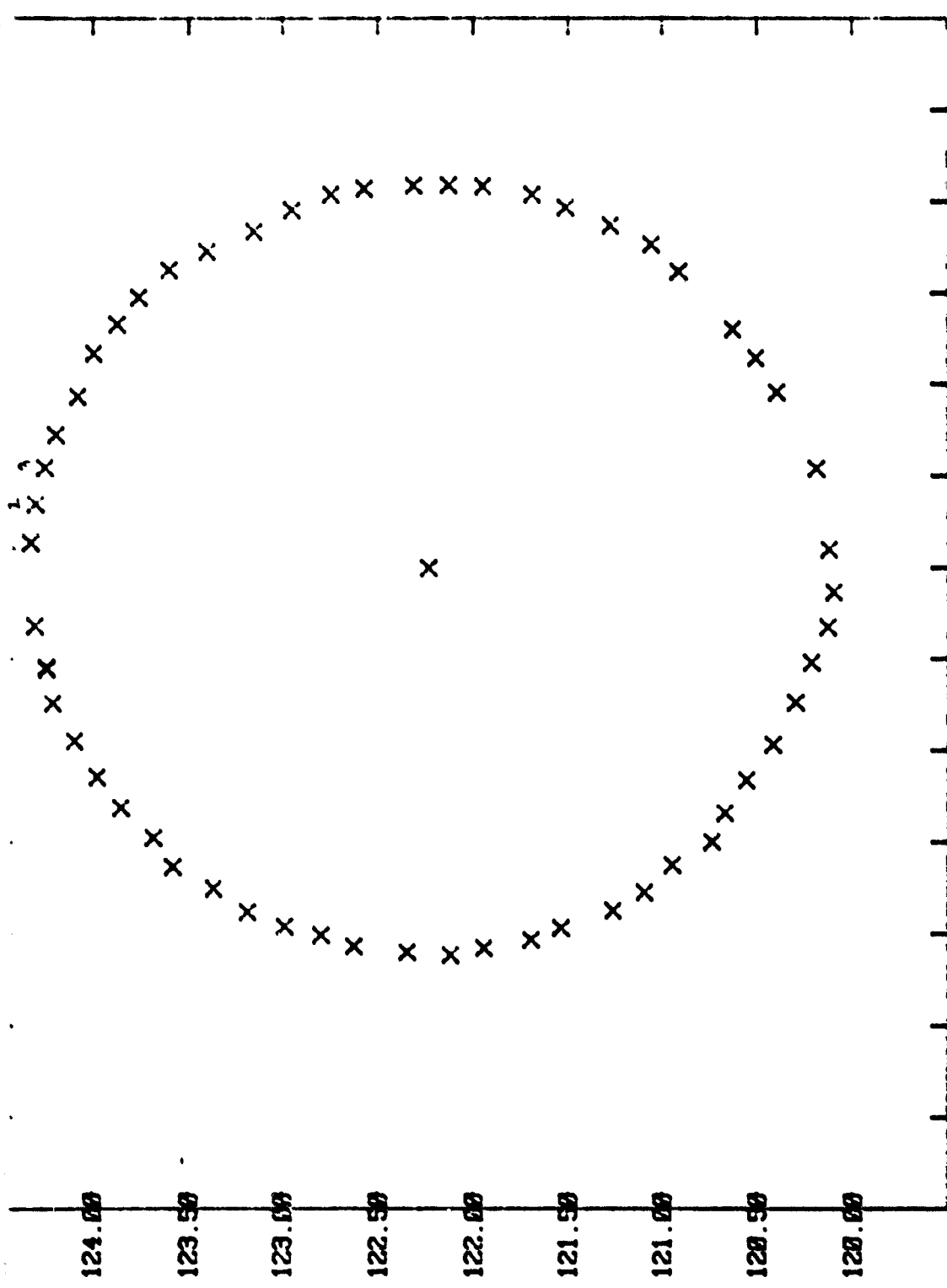
POSITION #2 S.D= 2.000%

12-A-10 F2.8 -.5M 2 K=.298.255.367.302 10% 0°C



POSITION #2 S.D.=2.338%

27-A-00 F2.8 -.5M 2 K=.298.255.367.302 <1% 0°C

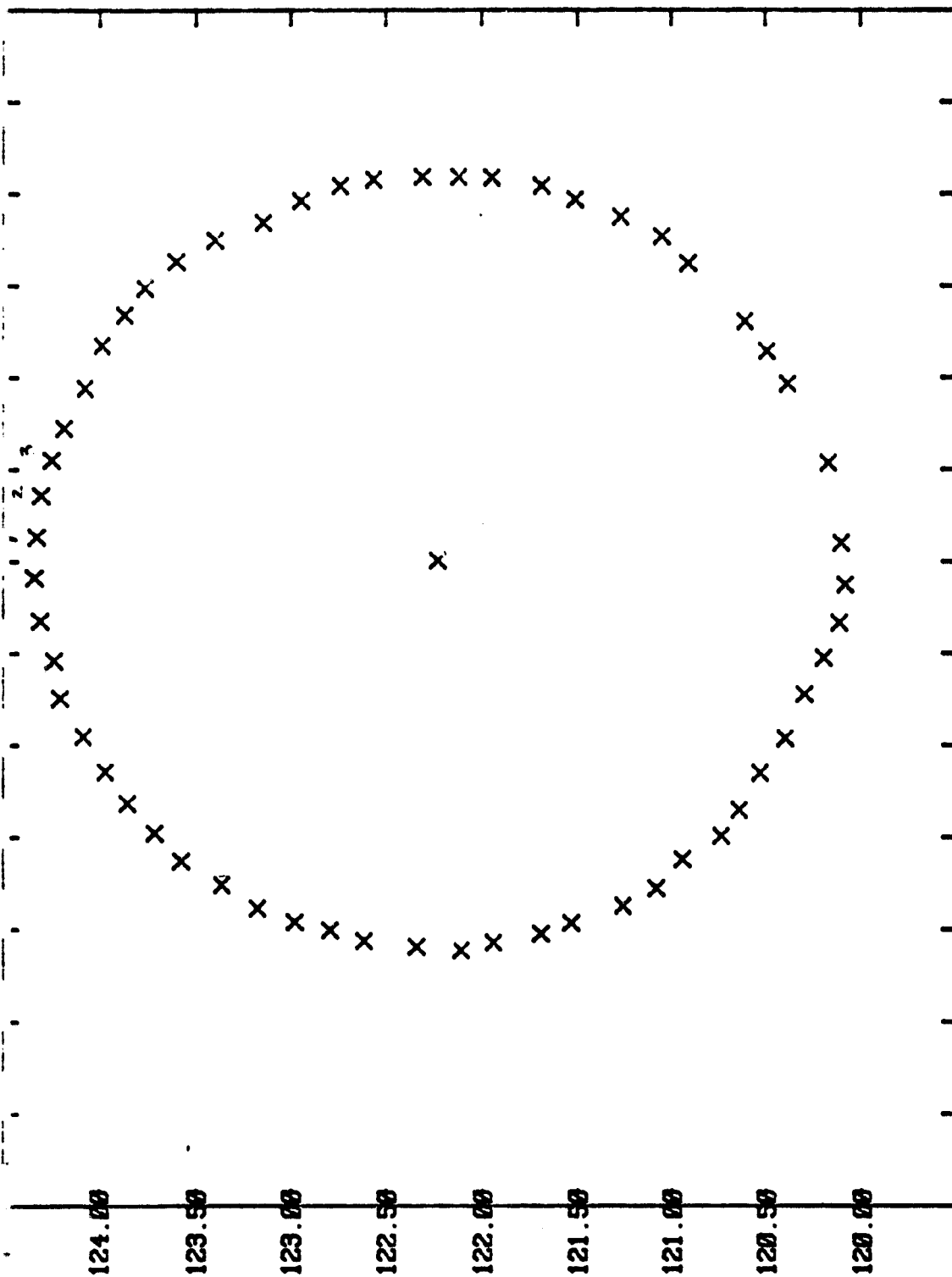


148.00 148.50 149.00 149.50 150.00 150.50 151.00 151.50 152.00 152.50 153.00 153.50

TR81-04

POSITION #2 S.D= 1.953 %

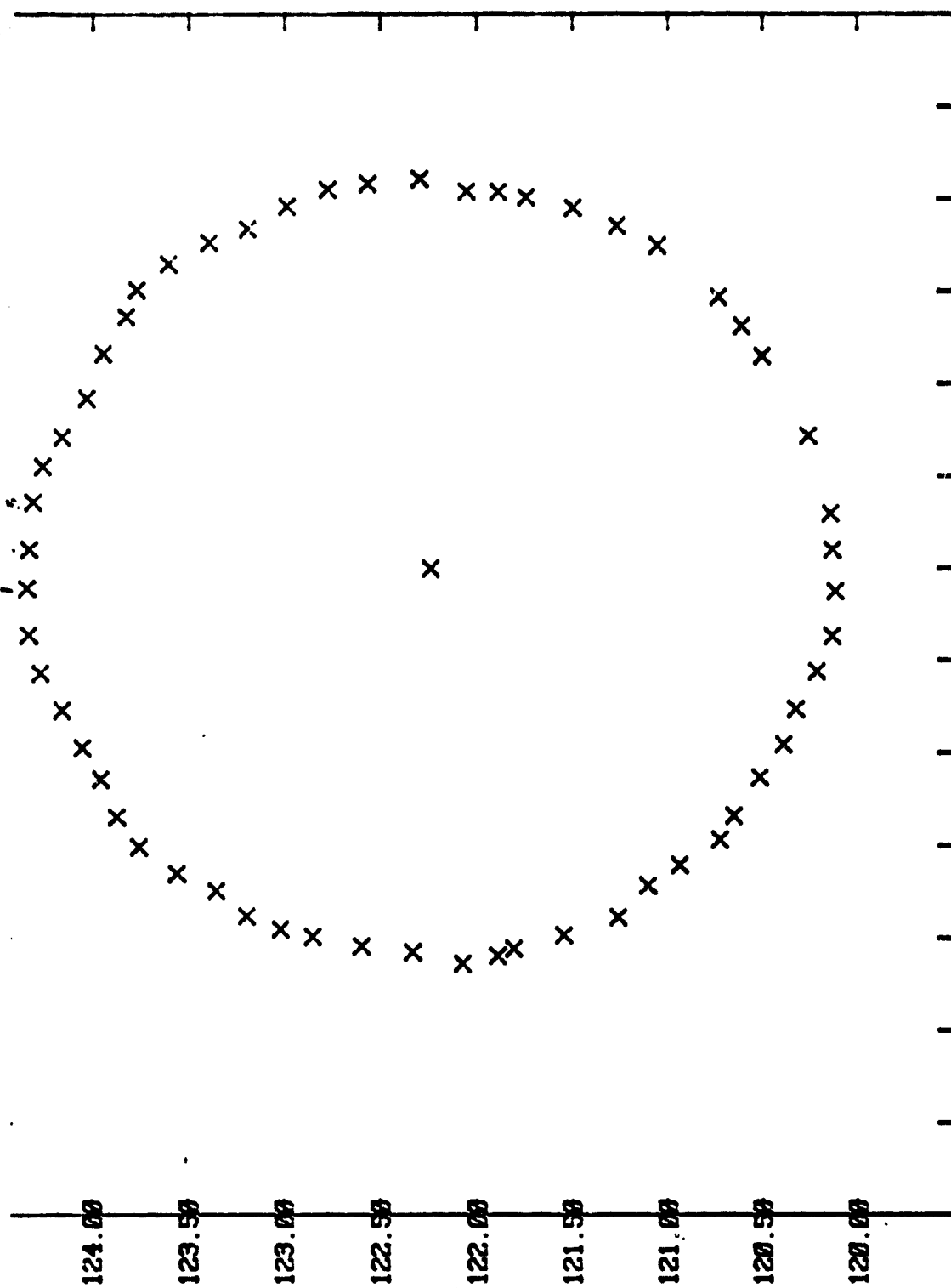
27-A-02 F2.8 -.5M 2 K=.298.255.367.302 100% 10°C



148.00 149.50 149.00 149.50 150.00 150.50 151.00 151.50 152.00 152.50 153.00 153.50

POSITION #2 S.D= 1.927%

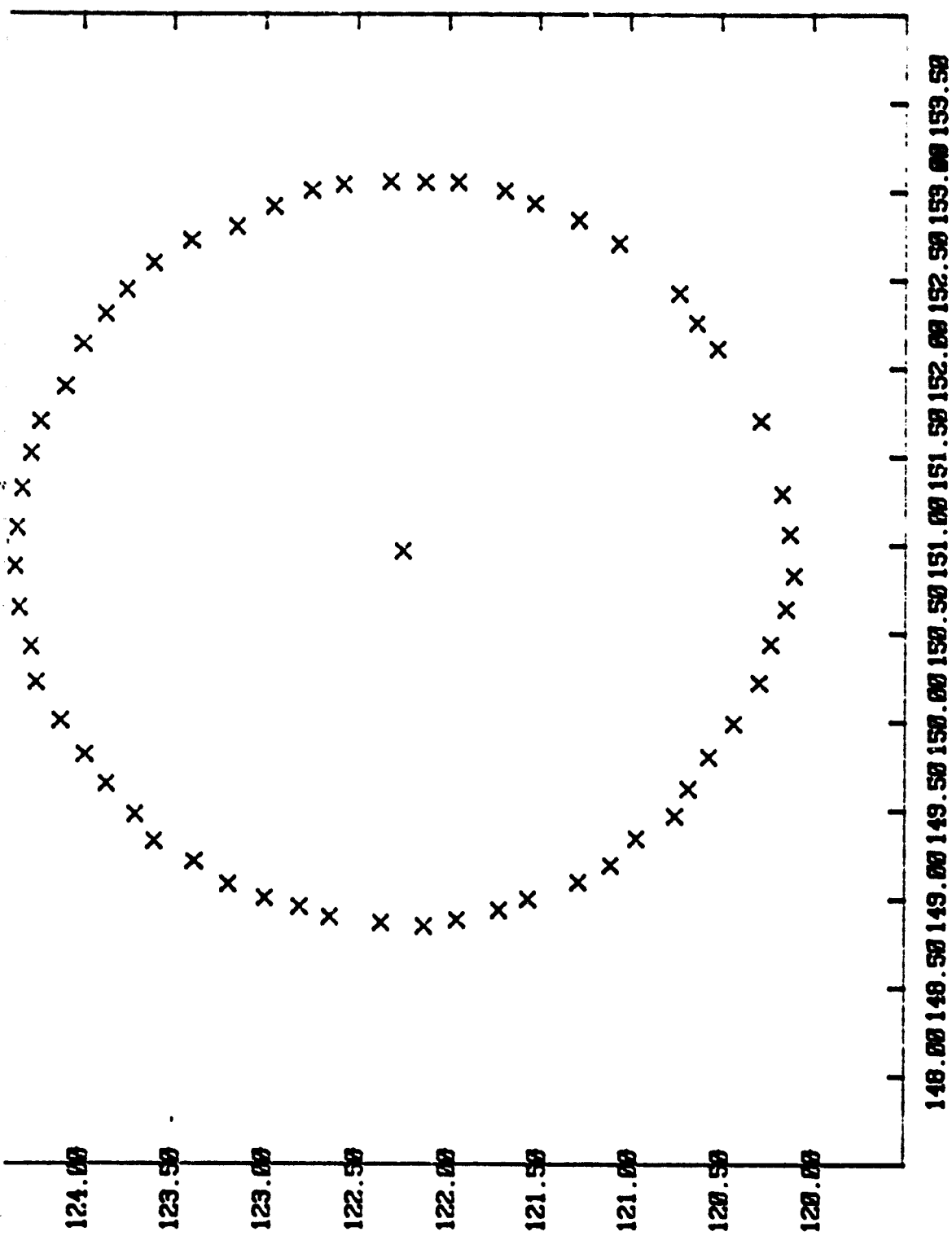
27-A-01 F2.8 -.5M 2 K=.298.255.367.302 10% 10°C



148.00 149.00 149.50 150.00 150.50 151.00 151.50 152.00 152.50 153.00 153.50

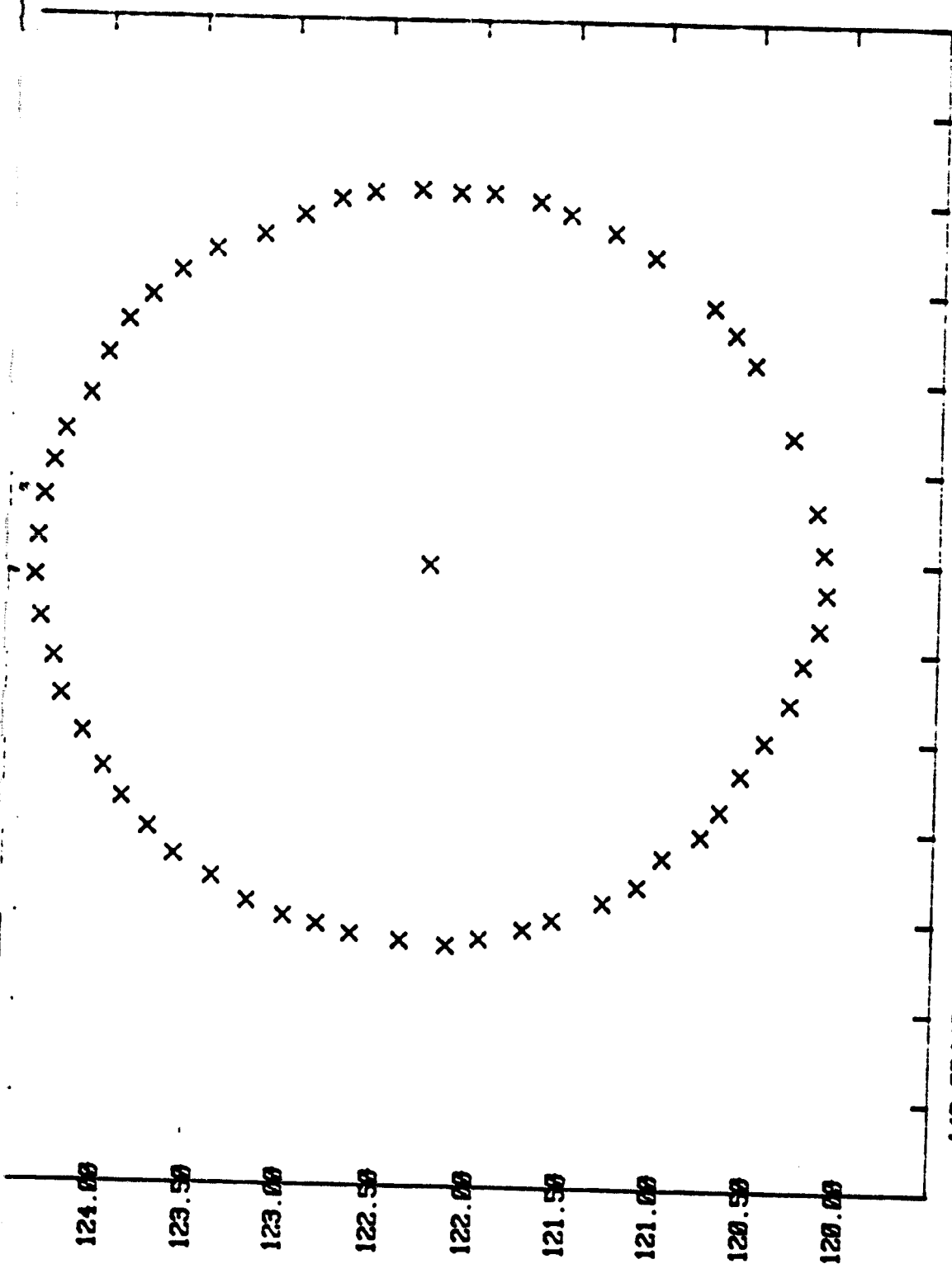
POSITION #2 S.D= 2.694 %

27-A-03 F2.8 -.5M 2 K=.298.255.367.302 <1% 10°C



POSITION #2 S.D= 1.942 %

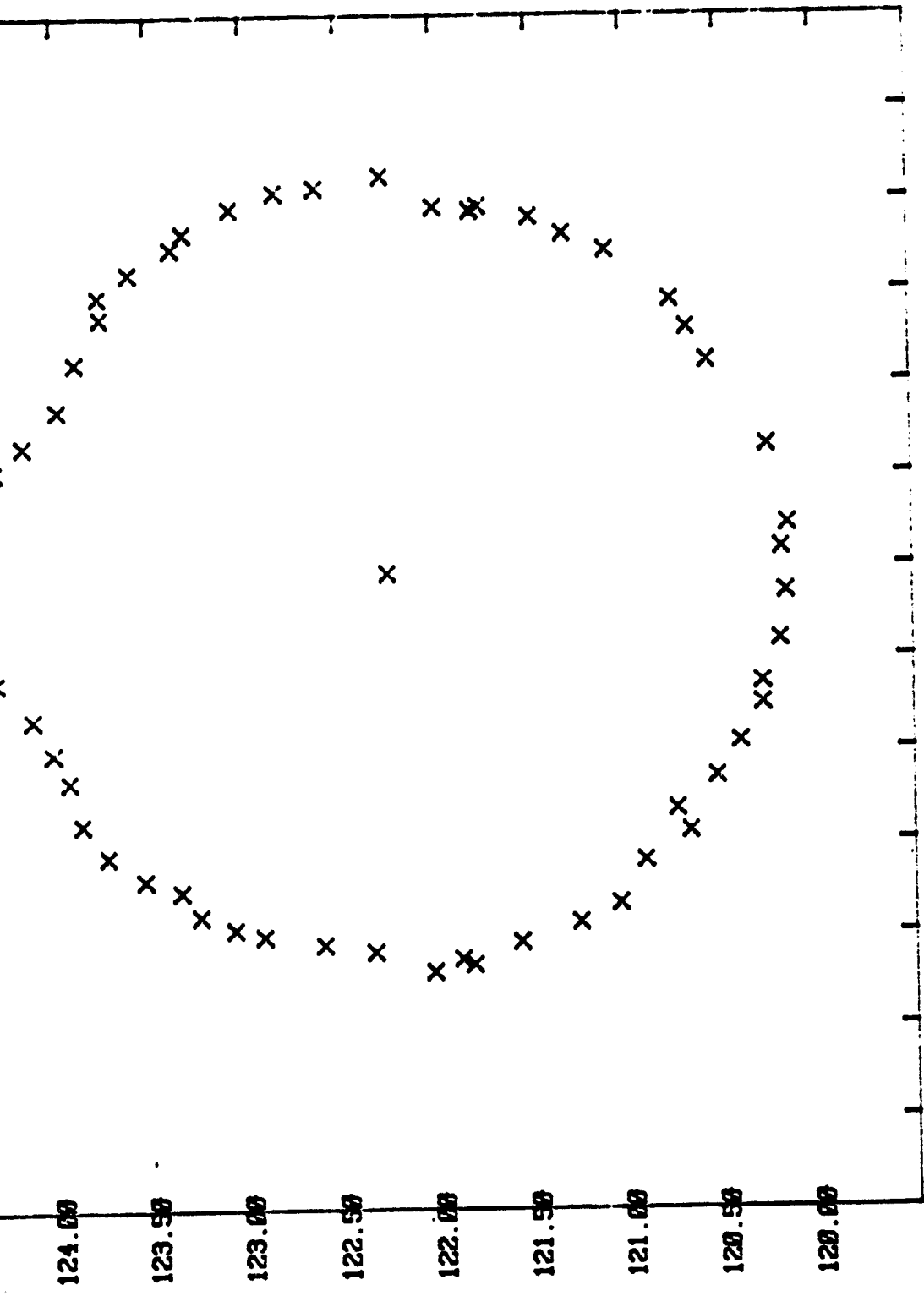
27-A-05 F2.8 -.5M 2 K=.298.255.367.302 100% 20°C



148.00 148.50 149.00 149.50 150.00 150.50 151.00 151.50 152.00 152.50 153.00 153.50

POSITION #2 S.D= 1.931%

27-A-04 F2.8 -.5M 2 K=.298.255.367.302 10% 20°C



148.00 148.50 149.00 149.50 150.00 150.50 151.00 151.50 152.00 152.50 153.00 153.50

POSITION #2 S.D= 4.941%

TR81-04

27-A-06 F2.8 -.5M 2 K=.298.255.367.302 <1% 20°C

Disk 12-A Track data file ID0011

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 16.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .3217E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .29800 | .25500 | .36700 | .30200 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .175 | 14.366 | .6220E+05 | .975 | 151.0 | 124.5 | 151.1527 | 124.3626 | .8778E-03 | .6328E-03 |
| .198 | 20.726 | .5702E+05 | 1.006 | 151.5 | 124.5 | 151.3628 | 124.3404 | .8360E-03 | .1077E-02 |
| .192 | 26.961 | .5958E+05 | 1.020 | 151.5 | 124.5 | 151.5639 | 124.2907 | .7943E-03 | .8064E-03 |
| .229 | 33.256 | .1007E+06 | 1.032 | 152.0 | 124.0 | 151.7412 | 124.2449 | .1216E-02 | .2014E-02 |
| .223 | 39.544 | .1078E+06 | 1.033 | 152.0 | 124.0 | 151.9580 | 124.1198 | .5715E-03 | .6507E-03 |
| .217 | 45.831 | .1142E+06 | 1.013 | 152.0 | 124.0 | 152.1901 | 124.0234 | .7101E-03 | .5523E-03 |
| .282 | 52.111 | .9735E+05 | 1.049 | 152.5 | 124.0 | 152.3491 | 123.8982 | .3987E-03 | .3730E-03 |
| .313 | 58.367 | .1002E+06 | 1.050 | 152.5 | 124.0 | 152.4934 | 123.7031 | .9527E-03 | .7535E-03 |
| .187 | 64.619 | .9365E+05 | .936 | 152.5 | 123.5 | 152.6425 | 123.6294 | .4646E-03 | .1206E-02 |
| .105 | 70.859 | .1085E+06 | .946 | 153.0 | 123.5 | 152.7512 | 123.4370 | .9417E-03 | .4706E-03 |
| | | | | | | | | | |
| .105 | 1.802 | .9754E+05 | 1.030 | 153.0 | 123.0 | 152.8610 | 123.1867 | .9165E-03 | .8157E-03 |
| .142 | 8.139 | .8731E+05 | 1.012 | 153.0 | 123.0 | 152.9735 | 122.9760 | .8935E-03 | .9486E-03 |
| .136 | 14.346 | .6865E+05 | 1.004 | 153.0 | 123.0 | 153.0594 | 122.7804 | .6680E-03 | .8192E-03 |
| .128 | 20.727 | .4526E+05 | .877 | 153.0 | 122.5 | 153.0938 | 122.5968 | .5970E-03 | .6147E-03 |
| .116 | 26.946 | .4334E+05 | .901 | 153.0 | 122.5 | 153.1105 | 122.3411 | .6562E-03 | .5942E-03 |
| .125 | 33.247 | .9198E+05 | 1.032 | 153.0 | 122.0 | 153.1107 | 122.1571 | .9248E-03 | .4706E-03 |
| .147 | 39.547 | .8665E+05 | 1.058 | 153.0 | 122.0 | 153.1045 | 121.9757 | .3920E-03 | .1148E-02 |
| .164 | 45.810 | .9507E+05 | 1.038 | 153.0 | 122.0 | 153.0593 | 121.7176 | .1350E-02 | .5641E-03 |
| .150 | 52.105 | .8177E+05 | .948 | 153.0 | 121.5 | 152.9863 | 121.5409 | .4377E-03 | .1004E-02 |
| .187 | 58.367 | .6746E+05 | 1.058 | 153.0 | 121.0 | 152.8934 | 121.2996 | .1482E-02 | .1152E-01 |
| | | | | | | | | | |
| .158 | 64.625 | .6012E+05 | 1.072 | 153.0 | 121.0 | 152.7847 | 121.0756 | .4544E-03 | .1114E-02 |
| .170 | 70.852 | .4898E+05 | 1.058 | 152.5 | 121.0 | 152.6389 | 120.9328 | .1044E-02 | .6514E-03 |
| .147 | 1.813 | .4546E+05 | 1.035 | 152.5 | 121.0 | 152.4811 | 120.7501 | .3488E-03 | .1195E-02 |
| .142 | 8.148 | .5932E+05 | .952 | 152.5 | 120.5 | 152.3406 | 120.6526 | .6813E-03 | .9140E-03 |
| .187 | 14.373 | .6200E+05 | .913 | 152.0 | 120.5 | 152.1444 | 120.5295 | .1095E-02 | .1385E-03 |
| .206 | 20.714 | .6243E+05 | .974 | 152.0 | 120.5 | 151.9781 | 120.4214 | .4342E-03 | .1324E-02 |
| .209 | 26.969 | .1383E+06 | 1.145 | 152.0 | 120.0 | 151.7580 | 120.3451 | .8141E-02 | .9245E-01 |
| .265 | 33.265 | .9793E+05 | 1.068 | 151.5 | 120.0 | 151.5589 | 120.2135 | .7068E-03 | .6754E-03 |
| .245 | 39.563 | .9117E+05 | 1.059 | 151.5 | 120.0 | 151.3445 | 120.1784 | .5090E-03 | .7764E-03 |
| .282 | 45.816 | .1066E+06 | 1.048 | 151.0 | 120.0 | 151.1192 | 120.1457 | .1349E-02 | .9541E-03 |
| | | | | | | | | | |
| .276 | 52.093 | .1040E+06 | 1.055 | 151.0 | 120.0 | 150.8827 | 120.1259 | .3754E-03 | .1202E-02 |
| .290 | 58.361 | .9002E+05 | 1.050 | 150.5 | 120.0 | 150.6892 | 120.1567 | .7612E-03 | .1281E-02 |
| .302 | 64.608 | .8586E+05 | 1.059 | 150.5 | 120.0 | 150.4966 | 120.2447 | .6907E-03 | .1482E-02 |
| .189 | 70.866 | .6129E+05 | .965 | 150.5 | 120.5 | 150.3028 | 120.3274 | .4894E-03 | .1514E-02 |
| .217 | 1.816 | .6073E+05 | .958 | 150.0 | 120.5 | 150.0913 | 120.4403 | .6930E-03 | .9524E-03 |

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TM81-64

| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .223 | 14.466 | .6187E+05 | .992 | 149.5 | 120.5 | 149.6729 | 120.6920 | .9538E-03 | .1421E-02 |
| .212 | 20.710 | .4692E+05 | 1.091 | 149.5 | 121.0 | 149.5212 | 120.7676 | .9844E-03 | .1254E-02 |
| .187 | 26.985 | .4228E+05 | 1.069 | 149.5 | 121.0 | 149.3939 | 120.9690 | .9802E-03 | .1168E-02 |
| .279 | 33.272 | .4291E+05 | 1.031 | 149.0 | 121.0 | 149.2587 | 121.1223 | .1671E-01 | .1125E-01 |
| .237 | 39.526 | .6039E+05 | .986 | 149.0 | 121.5 | 149.1466 | 121.2992 | .9588E-03 | .5317E-03 |
| .206 | 45.825 | .7963E+05 | .945 | 149.0 | 121.5 | 149.0514 | 121.5632 | .9037E-03 | .5097E-03 |
| .223 | 52.090 | .9438E+05 | 1.060 | 149.0 | 122.0 | 148.9980 | 121.7360 | .7008E-03 | .5842E-03 |
| .234 | 58.367 | .8652E+05 | 1.070 | 149.0 | 122.0 | 148.9424 | 121.9635 | .1745E-02 | .1444E-02 |
| .243 | 64.624 | .8551E+05 | 1.050 | 149.0 | 122.0 | 148.9030 | 122.1401 | .5044E-03 | .8208E-03 |
| .195 | 70.880 | .3728E+05 | .999 | 149.0 | 122.5 | 148.9187 | 122.3727 | .1621E-02 | .4271E-03 |
| .206 | 1.812 | .4440E+05 | .913 | 149.0 | 122.5 | 148.9527 | 122.6484 | .6108E-03 | .1117E-02 |
| .209 | 8.160 | .7275E+05 | 1.037 | 149.0 | 123.0 | 149.0120 | 122.8226 | .1779E-02 | .1403E-02 |
| .178 | 14.374 | .8395E+05 | 1.050 | 149.0 | 123.0 | 149.0617 | 123.0049 | .8170E-03 | .4253E-03 |
| .170 | 20.724 | .8937E+05 | 1.038 | 149.0 | 123.0 | 149.1424 | 123.2135 | .5605E-03 | .5074E-03 |
| .189 | 26.974 | .9514E+05 | .969 | 149.0 | 123.5 | 149.2654 | 123.3712 | .9164E-03 | .1077E-02 |
| .217 | 33.286 | .9252E+05 | .957 | 149.5 | 123.5 | 149.3855 | 123.6089 | .1155E-02 | .8805E-03 |
| .310 | 39.528 | .1050E+06 | 1.022 | 149.5 | 124.0 | 149.5410 | 123.7158 | .5631E-03 | .1194E-02 |
| .344 | 45.825 | .1043E+06 | 1.026 | 149.5 | 124.0 | 149.7062 | 123.8720 | .1477E-02 | .1200E-02 |
| .344 | 52.089 | .1129E+06 | 1.053 | 150.0 | 124.0 | 149.8761 | 123.9956 | .1727E-02 | .8833E-03 |
| .366 | 58.375 | .1070E+06 | 1.058 | 150.0 | 124.0 | 150.0735 | 124.1198 | .7486E-03 | .7742E-03 |
| .363 | 64.642 | .8967E+05 | 1.052 | 150.5 | 124.0 | 150.2754 | 124.2481 | .1164E-02 | .6932E-03 |
| .260 | 70.863 | .5970E+05 | 1.029 | 150.5 | 124.5 | 150.4811 | 124.2652 | .1195E-02 | .6251E-03 |
| .254 | 1.823 | .5998E+05 | .988 | 150.5 | 124.5 | 150.6984 | 124.3372 | .9745E-03 | .7097E-03 |
| .189 | 8.193 | .6102E+05 | .993 | 151.0 | 124.5 | 150.9339 | 124.3645 | .5751E-03 | .6754E-03 |

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| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .00836 | .00988 | .00363 | .01315 | -.01569 | .01763 |
| 1 | .01102 | -.03604 | .02489 | -.00468 | -.03680 | -.01628 |
| 2 | .00750 | .00397 | -.00450 | -.00301 | .00783 | .01467 |
| 3 | -.00153 | .01050 | .03101 | -.00053 | .00755 | -.02577 |
| 4 | -.01814 | -.01937 | -.04013 | .02424 | .01494 | .02901 |
| 5 | .04713 | .03781 | -.00909 | -.03155 | -.03065 | -.04549 |
| 6 | -.02413 | .02367 | -.01537 | .00502 | .01338 | .00401 |
| 7 | -.00428 | .00544 | .02670 | .01069 | .00942 | -.00904 |
| 8 | .00046 | .01025 | -.00571 | .02329 | -.02098 | .01329 |
| 9 | -.01828 | -.01047 | .02539 | -.02149 | .00309 | .00275 |

x0= 151.0215 y0= 122.2634 r0= 2.09493661 std.dev.= .02000591

HISTOGRAM DEVIATION >= e

| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|----|-----|-----|-----|-----|-----|------|------------|
| | 0 | 3 | 6 | 11 | 17 | 23 | 0 |

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| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | .00892 | .01039 | .00409 | .01355 | -.01537 | .01784 |
| 1 | .01116 | -.03601 | .02484 | -.00484 | -.03710 | -.01740 |
| 2 | .00697 | .00334 | -.00526 | -.00726 | .00689 | .01361 |
| 3 | -.00267 | | .02969 | -.00122 | .00610 | -.02708 |
| 4 | -.01966 | -.02091 | | .02268 | .01340 | .02349 |
| 5 | .04544 | .03637 | -.01048 | -.03333 | -.03180 | -.04681 |
| 6 | -.02547 | .02271 | -.01623 | | .01274 | -.00452 |
| 7 | -.00468 | .00516 | .02651 | .01062 | .00947 | -.00890 |
| 8 | .00068 | .01056 | -.00533 | .02375 | -.02047 | -.01774 |
| 9 | -.01769 | -.00985 | .02602 | -.02086 | .00451 | .00855 |

x0= 151.0219 y0= 122.2624 r0= 2.09540081 std.dev.= .01975182

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 2 | 5 | 13 | 16 | 21 | 3 |

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NDROI
Integration delay: Coarse 1.0 Fine 1.0 Track 64.0
Thresholds: .1160E+00 .4564E+00 .1344E-02
.1838E+06 .9190E+05 .7352E+06

Constants: .29800 .25500 .36700 .30200
Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|-------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .158 | 14.347 | .1333E+05 | 2.761 | 151.0 | 124.5 | 151.1693 | 124.3484 | .1777E-02 | .1305E-02 |
| .150 | 20.721 | .1245E+05 | 2.803 | 151.5 | 124.5 | 151.3871 | 124.3271 | .4648E-03 | .2119E-02 |
| .195 | 26.945 | .1269E+05 | 2.809 | 151.5 | 124.5 | 151.5843 | 124.2771 | .6725E-03 | .6610E-03 |
| .234 | 33.243 | .2354E+05 | 2.813 | 152.0 | 124.0 | 151.7623 | 124.2181 | .9636E-03 | .2043E-02 |
| .170 | 39.532 | .2436E+05 | 2.809 | 152.0 | 124.0 | 151.9815 | 124.1006 | .8958E-03 | .9587E-03 |
| .125 | 45.807 | .2525E+05 | 2.795 | 152.0 | 124.0 | 152.2088 | 124.0061 | .7872E-03 | .1149E-02 |
| .063 | 52.077 | .2170E+05 | 2.843 | 152.5 | 124.0 | 152.3714 | 123.8881 | .6553E-03 | .1231E-02 |
| .125 | 58.358 | .2286E+05 | 2.836 | 152.5 | 124.0 | 152.5156 | 123.6961 | .4631E-03 | .1370E-02 |
| .001 | 64.611 | .1985E+05 | 2.722 | 152.5 | 123.5 | 152.6656 | 123.6217 | .6339E-03 | .8475E-03 |
| .013 | 70.849 | .2295E+05 | 2.742 | 153.0 | 123.5 | 152.7784 | 123.4258 | .8947E-03 | .3661E-03 |
| .024 | 1.808 | .2061E+05 | 2.805 | 153.0 | 123.0 | 152.8854 | 123.1671 | .1594E-02 | .1633E-02 |
| .066 | 8.157 | .1842E+05 | 2.783 | 153.0 | 123.0 | 152.9994 | 122.9662 | .6350E-03 | .7541E-03 |
| .066 | 14.349 | .1460E+05 | 2.773 | 153.0 | 123.0 | 153.0801 | 122.7711 | .7602E-03 | .8965E-03 |
| -.018 | 20.730 | .9792E+04 | 2.652 | 153.0 | 122.5 | 153.1143 | 122.5814 | .9352E-03 | .6901E-03 |
| .021 | 26.964 | .9490E+04 | 2.684 | 153.0 | 122.5 | 153.1305 | 122.3332 | .1155E-02 | .1601E-02 |
| .066 | 33.285 | .2073E+05 | 2.809 | 153.0 | 122.0 | 153.1311 | 122.1430 | .7233E-03 | .4464E-03 |
| .060 | 39.531 | .1991E+05 | 2.831 | 153.0 | 122.0 | 153.1268 | 121.9657 | .1173E-02 | .1363E-02 |
| .077 | 45.819 | .2213E+05 | 2.817 | 153.0 | 122.0 | 153.0812 | 121.7099 | .5341E-03 | .8270E-03 |
| .097 | 52.083 | .1762E+05 | 2.730 | 153.0 | 121.5 | 153.0071 | 121.5295 | .4062E-03 | .7782E-03 |
| .128 | 58.366 | .1498E+05 | 2.842 | 153.0 | 121.0 | 152.9110 | 121.2877 | .8371E-03 | .8563E-03 |
| .100 | 64.626 | .1344E+05 | 2.846 | 153.0 | 121.0 | 152.8051 | 121.0652 | .4634E-03 | .4382E-03 |
| .161 | 70.859 | .1117E+05 | 2.839 | 152.5 | 121.0 | 152.6535 | 120.9248 | .8586E-03 | .5525E-03 |
| .156 | 1.823 | .1027E+05 | 2.811 | 152.5 | 121.0 | 152.5039 | 120.7427 | .5420E-03 | .9193E-03 |
| .167 | 8.152 | .1264E+05 | 2.736 | 152.5 | 120.5 | 152.3454 | 120.6411 | .9371E-03 | .6828E-03 |
| .128 | 14.364 | .1316E+05 | 2.693 | 152.0 | 120.5 | 152.1799 | 120.5181 | .8846E-03 | .9537E-03 |
| .139 | 20.737 | .1315E+05 | 2.754 | 152.0 | 120.5 | 151.9979 | 120.4113 | .8031E-03 | .1331E-02 |
| .156 | 26.950 | .2959E+05 | 2.921 | 152.0 | 120.0 | 151.7767 | 120.3262 | .9501E-02 | .7808E-01 |
| .133 | 33.256 | .1955E+05 | 2.851 | 151.5 | 120.0 | 151.5769 | 120.1990 | .6597E-03 | .2656E-02 |
| .133 | 39.545 | .2006E+05 | 2.846 | 151.5 | 120.0 | 151.3682 | 120.1662 | .5513E-03 | .1186E-02 |
| .147 | 45.819 | .2371E+05 | 2.825 | 151.0 | 120.0 | 151.1355 | 120.1358 | .1206E-02 | .7129E-03 |
| .212 | 52.117 | .2337E+05 | 2.835 | 151.0 | 120.0 | 150.9044 | 120.1153 | .1637E-02 | .9651E-03 |
| .133 | 58.370 | .2014E+05 | 2.834 | 150.5 | 120.0 | 150.7011 | 120.1430 | .9227E-03 | .6594E-03 |
| .125 | 64.636 | .1929E+05 | 2.844 | 150.5 | 120.0 | 150.5115 | 120.2261 | .1457E-02 | .1667E-02 |
| .105 | 70.866 | .1322E+05 | 2.754 | 150.5 | 120.5 | 150.3304 | 120.3340 | .8037E-03 | .2011E-03 |
| .086 | 1.637 | .1309E+05 | 2.748 | 150.0 | 120.5 | 150.0730 | 120.4329 | .9541E-03 | .1370E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|-------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .041 | 8.405 | .1320E+05 | 2.777 | 149.5 | 120.5 | 149.6864 | 120.5637 | .3992E-03 | .9347E-03 |
| .052 | 20.743 | .1052E+05 | 2.868 | 149.5 | 121.0 | 149.5353 | 120.7663 | .7934E-03 | .1261E-02 |
| .088 | 26.971 | .9678E+04 | 2.851 | 149.5 | 121.0 | 149.4159 | 120.9611 | .1690E-02 | .1645E-02 |
| .119 | 33.273 | .9444E+04 | 2.815 | 149.5 | 121.0 | 149.3013 | 121.1255 | .4064E-03 | .1110E-02 |
| .077 | 39.557 | .1634E+05 | 2.782 | 149.0 | 121.5 | 149.1718 | 121.2929 | .1844E-01 | .1664E-01 |
| .080 | 45.838 | .1723E+05 | 2.725 | 149.0 | 121.5 | 149.0707 | 121.5563 | .4102E-03 | .6692E-03 |
| .116 | 52.110 | .2184E+05 | 2.845 | 149.0 | 122.0 | 149.0194 | 121.7359 | .6790E-03 | .2708E-02 |
| .122 | 58.380 | .2003E+05 | 2.852 | 149.0 | 122.0 | 148.9666 | 121.9652 | .2174E-02 | .1177E-02 |
| .052 | 64.643 | .1988E+05 | 2.831 | 149.0 | 122.0 | 148.9257 | 122.1433 | .3323E-02 | .1715E-02 |
| .018 | 70.881 | .8401E+04 | 2.691 | 149.0 | 122.5 | 148.9410 | 122.3703 | .8568E-03 | .1019E-02 |
| -.024 | 1.827 | .9582E+04 | 2.692 | 149.0 | 122.5 | 148.9739 | 122.6407 | .8267E-03 | .7891E-03 |
| -.041 | 8.186 | .1537E+05 | 2.807 | 149.0 | 123.0 | 149.0322 | 122.8262 | .1539E-02 | .6834E-03 |
| -.052 | 14.378 | .1762E+05 | 2.817 | 149.0 | 123.0 | 149.0795 | 123.0010 | .1349E-02 | .5981E-03 |
| -.041 | 20.721 | .1902E+05 | 2.809 | 149.0 | 123.0 | 149.1568 | 123.1997 | .8075E-03 | .1765E-02 |
| .060 | 26.977 | .1929E+05 | 2.753 | 149.5 | 123.5 | 149.2935 | 123.3991 | .1629E-02 | .8623E-03 |
| .015 | 33.278 | .1951E+05 | 2.743 | 149.5 | 123.5 | 149.4104 | 123.6075 | .4558E-03 | .4617E-03 |
| .116 | 39.543 | .2341E+05 | 2.812 | 149.5 | 124.0 | 149.5619 | 123.7186 | .9940E-03 | .9159E-03 |
| .086 | 45.812 | .2286E+05 | 2.822 | 149.5 | 124.0 | 149.7247 | 123.8745 | .1224E-02 | .2007E-02 |
| .069 | 52.109 | .2478E+05 | 2.837 | 150.0 | 124.0 | 149.9020 | 123.9919 | .9338E-03 | .3684E-03 |
| .170 | 58.383 | .2352E+05 | 2.830 | 150.0 | 124.0 | 150.0869 | 124.1161 | .1295E-02 | .2314E-02 |
| .122 | 64.648 | .1984E+05 | 2.837 | 150.5 | 124.0 | 150.2978 | 124.2448 | .5575E-03 | .2148E-02 |
| .049 | 70.880 | .1253E+05 | 2.813 | 150.5 | 124.5 | 150.4966 | 124.2729 | .1390E-02 | .1001E-02 |
| -.015 | 1.826 | .1293E+05 | 2.778 | 150.5 | 124.5 | 150.7113 | 124.3421 | .5373E-03 | .1357E-02 |
| .046 | 8.163 | .1314E+05 | 2.771 | 151.0 | 124.5 | 150.9558 | 124.3654 | .1645E-02 | .8991E-03 |

ORIGINAL PAGE IS
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| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .00116 | .00454 | -.00252 | -.00497 | -.02509 | .00984 |
| 1 | .00979 | -.03481 | .02634 | -.00164 | -.03916 | -.01325 |
| 2 | .00663 | .00203 | -.00575 | -.00356 | .00911 | .01520 |
| 3 | -.00084 | .00889 | .03143 | -.00593 | .00795 | -.02098 |
| 4 | -.01896 | -.01860 | -.03145 | .02905 | .01876 | .02589 |
| 5 | .04872 | .04392 | .00123 | -.03816 | -.03171 | -.04681 |
| 6 | -.02028 | .02259 | -.01674 | -.02055 | .00762 | -.00414 |
| 7 | -.00747 | -.00019 | .02356 | .00839 | .00796 | -.00643 |
| 8 | .00366 | .01274 | -.00642 | .02320 | -.01445 | -.00838 |
| 9 | -.01839 | -.00411 | .02832 | -.00577 | .01703 | .01612 |

x0= 151.0420 y0= 122.2553 r0= 2.09572840 std.dev.= .02011792

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 3 | 6 | 11 | 11 | 29 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY.

| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .00159 | .00490 | -.00224 | -.00477 | -.00500 | .00732 |
| 1 | .00967 | -.03505 | .07602 | -.00203 | -.03974 | .01394 |
| 2 | .00583 | .00114 | -.00676 | -.00465 | .00795 | .01335 |
| 3 | -.00215 | .00751 | .03000 | -.00739 | .00645 | .02248 |
| 4 | -.02047 | -.02010 | | .02761 | .01736 | .02455 |
| 5 | .04745 | .04272 | .00010 | -.03921 | -.03263 | .04762 |
| 6 | -.02098 | .02198 | -.01724 | -.02094 | | -.00428 |
| 7 | -.00752 | -.00013 | .02370 | .00863 | .00830 | -.00602 |
| 8 | .00413 | .01327 | -.00584 | .02382 | -.01381 | .00772 |
| 9 | -.01773 | -.00347 | .02894 | -.00517 | .01758 | .01461 |

x0= 151.0426 r0= 122.2545 r0= 2.09615254 std.dev.= .02000283

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 3 | 5 | 13 | 9 | 28 | 2 |

ORIGINAL PAGE IS
OF POOR QUALITY

Disk 27-A Track data file IDATA00

NDR0:
Integration delay: .1160E+00
Thresholds: .1838E+06

Coarse 1.0
Fine 1.0
Track 192.0

.4564E+00
.9190E+05
.7974E+00
.7352E+06

Constants: .29800
Displacements: 0.00000

.25500
0.00000

.36700
0.00000

.30200
0.00000

| | | dark | star | reference | | Position | | standard deviation | |
|-------|--------|-----------|-------|-----------|---------|----------|----------|--------------------|-----------|
| temp | angle | current | mag. | X | Y | X | Y | X | Y |
| .142 | 14.361 | .1231E+05 | 6.010 | 151.0 | 124.5 | 151.1218 | 124.3611 | .7980E-03 | .9893E-03 |
| .198 | 20.716 | .1211E+05 | 6.061 | 151.5 | 124.5 | 151.3601 | 124.3410 | .1921E-02 | .2093E-02 |
| .170 | 26.958 | .1212E+05 | 6.072 | 151.5 | 124.5 | 151.5523 | 124.2983 | .1491E-02 | .1659E-02 |
| .195 | 33.267 | .1275E+05 | 6.086 | 151.5 | 124.0 | 151.7236 | 124.2198 | .1540E-02 | .9620E-02 |
| .248 | 39.527 | .1385E+05 | 6.071 | 152.0 | 124.0 | 151.9319 | 124.0890 | .1920E-02 | .1903E-02 |
| .187 | 45.789 | .1390E+05 | 6.045 | 152.0 | 124.0 | 152.1700 | 123.9896 | .1802E-02 | .2564E-02 |
| .192 | 52.079 | .1360E+05 | 6.106 | 152.5 | 124.0 | 152.3599 | 123.8814 | .1057E-02 | .4912E-02 |
| .226 | 58.370 | .1368E+05 | 6.123 | 152.5 | 124.0 | 152.5025 | 123.6863 | .1068E-02 | .2335E-02 |
| .102 | 64.603 | .1342E+05 | 6.015 | 152.5 | 123.5 | 152.6537 | 123.6281 | .2553E-02 | .3467E-02 |
| .024 | 70.863 | .1246E+05 | 6.014 | 152.5 | 123.5 * | 152.7548 | 123.4381 | .1361E-01 | .5123E-02 |
| -.001 | 1.802 | .1087E+05 | 6.037 | 153.0 | 123.0 | 152.8478 | 123.1858 | .1700E-02 | .9546E-03 |
| .013 | 8.139 | .1080E+05 | 6.010 | 153.0 | 123.0 | 152.9635 | 122.9904 | .2619E-02 | .2533E-02 |
| .032 | 14.354 | .1056E+05 | 6.009 | 153.0 | 123.0 | 153.0495 | 122.7910 | .8703E-03 | .3527E-02 |
| .074 | 20.720 | .1031E+05 | 5.925 | 153.0 | 122.5 | 153.0795 | 122.5931 | .5874E-02 | .1329E-01 |
| .029 | 26.954 | .1014E+05 | 5.938 | 153.0 | 122.5 | 153.0977 | 122.3360 | .1068E-02 | .2725E-02 |
| .021 | 33.263 | .1077E+05 | 6.029 | 153.0 | 122.0 | 153.0718 | 122.1117 | .2730E-02 | .2599E-02 |
| .102 | 39.524 | .1076E+05 | 6.050 | 153.0 | 122.0 | 153.0744 | 121.9379 | .3316E-02 | .2792E-02 |
| .091 | 45.818 | .1090E+05 | 6.055 | 153.0 | 122.0 * | 153.0275 | 121.6985 | .4843E-02 | .4288E-01 |
| .080 | 52.098 | .1062E+05 | 5.970 | 153.0 | 121.5 | 152.9627 | 121.5321 | .2120E-02 | .2220E-02 |
| .074 | 58.379 | .1046E+05 | 6.053 | 153.0 | 121.0 * | 152.8676 | 121.2799 | .5939E-02 | .8051E-02 |
| .083 | 64.632 | .1040E+05 | 6.053 | 153.0 | 121.0 | 152.7590 | 121.0579 | .7311E-03 | .2297E-02 |
| .125 | 70.848 | .1264E+05 | 6.051 | 152.5 | 121.0 | 152.6200 | 120.9380 | .2431E-02 | .3313E-02 |
| .091 | 1.798 | .1255E+05 | 6.033 | 152.5 | 121.0 | 152.4698 | 120.7584 | .1462E-02 | .2972E-02 |
| .094 | 8.141 | .1281E+05 | 5.934 | 152.5 | 120.5 | 152.3167 | 120.5929 | .2383E-02 | .1812E-02 |
| .091 | 14.345 | .1285E+05 | 5.868 | 152.0 | 120.5 | 152.1631 | 120.4847 | .2133E-02 | .1309E-02 |
| .111 | 20.719 | .1286E+05 | 5.923 | 152.0 | 120.5 | 151.9939 | 120.3847 | .1116E-02 | .1834E-02 |
| .136 | 26.940 | .1319E+05 | 6.086 | 151.5 | 120.0 * | 151.7216 | 120.2740 | .2426E-01 | .6282E-01 |
| .158 | 33.258 | .1268E+05 | 6.023 | 151.5 | 120.0 | 151.5238 | 120.1734 | .3005E-02 | .3577E-02 |
| .220 | 39.504 | .1273E+05 | 6.015 | 151.5 | 120.0 | 151.3263 | 120.1457 | .1860E-02 | .1633E-02 |
| .260 | 45.792 | .1328E+05 | 5.986 | 151.0 | 120.0 | 151.1054 | 120.1229 | .9098E-03 | .2010E-02 |
| .215 | 52.072 | .1327E+05 | 5.996 | 151.0 | 120.0 | 150.8838 | 120.1057 | .1855E-02 | .2184E-02 |
| .251 | 58.355 | .1095E+05 | 6.017 | 150.5 | 120.0 | 150.6452 | 120.1250 | .1382E-02 | .2816E-02 |
| .206 | 64.622 | .1089E+05 | 6.024 | 150.5 | 120.0 | 150.4615 | 120.2089 | .1090E-02 | .3012E-02 |
| .175 | 70.855 | .1040E+05 | 5.947 | 150.5 | 120.5 * | 150.2971 | 120.3090 | .1254E-01 | .1743E-02 |
| .116 | 1.788 | .1020E+05 | 5.933 | 150.0 | 120.5 | 150.0542 | 120.4017 | .2035E-02 | .2188E-02 |

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| | | | | | | | | | | | |
|------|--------|-----------|-------|-------|---------|----------|----------|------|-----------|-----------|----|
| .1 | 8 | E+05 | 5.8 | | 5 | 14 | 14 | 0.51 | 4E+0 | .14 | 02 |
| .105 | 14.351 | .1039E+05 | 5.948 | 149.5 | 120.5 | 149.6411 | 120.6210 | | .1903E-02 | .1671E-02 | |
| .144 | 20.711 | .1030E+05 | 6.071 | 149.5 | 121.0 | 149.5230 | 120.7599 | | .1462E-02 | .4959E-02 | |
| .097 | 26.946 | .1029E+05 | 6.048 | 149.5 | 121.0 | 149.4026 | 120.9540 | | .1721E-02 | .2864E-02 | |
| .189 | 33.242 | .1029E+05 | 6.024 | 149.5 | 121.0 | 149.2905 | 121.1129 | | .5791E-03 | .2210E-02 | |
| | | | | | | | | | | | |
| .094 | 39.498 | .1060E+05 | 6.007 | 149.0 | 121.5 | 149.1384 | 121.2793 | | .2979E-01 | .3524E-01 | |
| .029 | 45.817 | .1059E+05 | 5.941 | 149.0 | 121.5 | 149.0345 | 121.5536 | | .1898E-02 | .2397E-02 | |
| .063 | 52.093 | .1106E+05 | 6.058 | 149.0 | 122.0 * | 148.9822 | 121.7159 | | .5723E-02 | .4618E-01 | |
| .102 | 58.353 | .1102E+05 | 6.055 | 149.0 | 122.0 | 148.9304 | 121.9324 | | .2587E-02 | .2060E-02 | |
| .032 | 64.622 | .1098E+05 | 6.034 | 149.0 | 122.0 | 148.8842 | 122.1081 | | .1329E-02 | .2023E-02 | |
| .055 | 70.877 | .9837E+04 | 5.895 | 149.0 | 122.5 | 148.9266 | 122.3571 | | .2700E-02 | .1574E-02 | |
| .069 | 1.801 | .9889E+04 | 5.885 | 149.0 | 122.5 | 148.9606 | 122.6163 | | .2505E-02 | .2156E-02 | |
| .100 | 8.148 | .1026E+05 | 5.979 | 149.0 | 123.0 | 149.0105 | 122.8387 | | .2598E-02 | .3641E-02 | |
| .029 | 14.361 | .1040E+05 | 5.989 | 149.0 | 123.0 | 149.0507 | 123.0043 | | .1379E-02 | .2444E-02 | |
| .083 | 20.703 | .1048E+05 | 5.989 | 149.0 | 123.0 | 149.1211 | 123.1893 | | .1710E-02 | .2611E-02 | |
| | | | | | | | | | | | |
| .086 | 26.959 | .1082E+05 | 5.999 | 149.5 | 123.5 * | 149.2729 | 123.3726 | | .1421E-01 | .1405E-01 | |
| .114 | 33.258 | .1069E+05 | 5.970 | 149.5 | 123.5 | 149.3770 | 123.5872 | | .1580E-02 | .2856E-02 | |
| .164 | 39.524 | .1083E+05 | 6.024 | 149.5 | 124.0 * | 149.5278 | 123.7489 | | .2024E-02 | .3709E-01 | |
| .248 | 45.774 | .1073E+05 | 5.984 | 149.5 | 124.0 | 149.6786 | 123.8807 | | .2290E-02 | .2307E-02 | |
| .237 | 52.094 | .1098E+05 | 5.993 | 150.0 | 124.0 | 149.8647 | 123.9769 | | .1681E-02 | .1836E-02 | |
| .254 | 58.361 | .1090E+05 | 5.990 | 150.0 | 124.0 | 150.0449 | 124.0866 | | .3935E-02 | .2209E-02 | |
| .245 | 64.600 | .1081E+05 | 6.025 | 150.5 | 124.0 * | 150.2659 | 124.2090 | | .9564E-02 | .6369E-02 | |
| .260 | 70.855 | .1022E+05 | 6.012 | 150.5 | 124.5 | 150.4551 | 124.2814 | | .2125E-02 | .2430E-02 | |
| .170 | 1.798 | .1017E+05 | 5.972 | 150.5 | 124.5 | 150.6616 | 124.3489 | | .1171E-02 | .1923E-02 | |
| .161 | 8.138 | .1250E+05 | 5.984 | 151.0 | 124.5 | 150.9122 | 124.3607 | | .1965E-02 | .1295E-02 | |

ORIGINAL PAGE IS
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delta ri

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .01822 | .02414 | .02284 | -.00103 | -.03912 | -.00568 |
| 1 | .02060 | -.02580 | .04760 | .01324 | -.03576 | -.01299 |
| 2 | .01115 | -.00155 | -.01027 | -.03380 | -.01264 | -.00951 |
| 3 | -.02090 | -.00616 | .01436 | -.02563 | -.01577 | .00720 |
| 4 | .00519 | .00538 | -.00350 | .03539 | .02403 | .02532 |
| 5 | .04410 | .05226 | .00974 | -.03586 | -.02282 | .03171 |
| 6 | .02490 | .00243 | -.03758 | -.04060 | .00660 | -.00655 |
| 7 | -.00394 | .00332 | .03045 | -.01350 | -.01723 | -.01428 |
| 8 | .00107 | .01152 | -.02935 | .01334 | .01105 | .00845 |
| 9 | -.02427 | -.02153 | -.00053 | .00587 | .03173 | .01710 |

x0= 151.0101 y0= 122.2460 r0= 2.09989357 std.dev.= .02257977

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 3 | 9 | 13 | 15 | 19 | 0 |

ORIGINAL PAGE IS
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| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .01859 | .02462 | .02339 | -.00042 | -.03846 | -.00499 |
| 1 | .02130 | -.02511 | .04827 | | -.03522 | -.01254 |
| 2 | .01150 | | -.01018 | -.03386 | -.01283 | |
| 3 | -.02140 | -.00688 | .01343 | -.02671 | -.01705 | .00574 |
| 4 | .00358 | .00361 | | .03326 | .02177 | .02293 |
| 5 | .04160 | .04965 | .00707 | | -.02561 | -.03450 |
| 6 | .02208 | -.00038 | -.04035 | -.04333 | | -.00210 |
| 7 | | .00098 | .02821 | -.01558 | -.01912 | -.01600 |
| 8 | -.00051 | .01010 | | .01231 | | .00777 |
| 9 | -.02478 | -.02187 | -.00069 | .00985 | .03186 | .01737 |

x0= 151.0090 y0= 122.2446 r0= 2.10095263 std.dev.= .02337596

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 5 | 6 | 13 | 13 | 14 | 9 |

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Disk 21-A Track data file TDATA02

NIRRI
Integration delay: Coarse 1.0 Fine 1.0 Track 16.0
Thresholds: .1160E+00 .4564E+00 .1344E+02
.1338E+06 .9190E+05 .7352E+06

Constants: .29800 .25500 .36700 .30200
Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark current | star mag. | reference | | Position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 10.289 | 14.363 | .7035E+05 | .996 | 151.0 | 124.5 | 151.1325 | 124.3250 | .1197E-02 | .1034E-02 |
| 10.255 | 20.724 | .6732E+05 | 1.023 | 151.5 | 124.5 | 151.3441 | 124.3008 | .5124E-03 | .1040E-02 |
| 10.266 | 26.978 | .6874E+05 | 1.038 | 151.5 | 124.5 | 151.5454 | 124.2504 | .5630E-03 | .1607E-02 |
| 10.295 | 33.245 | .9780E+05 | 1.030 | 151.5 | 124.0 | 151.7238 | 124.1940 | .5968E-03 | .9539E-03 |
| 10.297 | 39.504 | .1177E+06 | 1.030 | 152.0 | 124.0 | 151.9378 | 124.0812 | .6375E-03 | .1179E-02 |
| 10.311 | 45.816 | .1216E+06 | 1.014 | 152.0 | 124.0 | 152.1684 | 123.9942 | .1147E-02 | .1190E-02 |
| 10.323 | 52.072 | .1065E+06 | 1.056 | 152.5 | 124.0 | 152.3289 | 123.8708 | .6750E-03 | .8346E-03 |
| 10.710 | 58.365 | .9728E+05 | 1.044 | 152.5 | 123.5 | 152.4754 | 123.7473 | .1224E-02 | .3734E-01 |
| 10.146 | 64.622 | .1029E+06 | .939 | 152.5 | 123.5 | 152.6222 | 123.6013 | .9991E-03 | .5534E-03 |
| 10.230 | 70.848 | .1174E+06 | .962 | 153.0 | 123.5 | 152.7256 | 123.4039 | .1200E-02 | .5273E-03 |
| 10.179 | 1.791 | .1066E+06 | 1.024 | 153.0 | 123.0 | 152.8337 | 123.1505 | .8446E-03 | .1397E-02 |
| 10.216 | 8.148 | .9524E+05 | 1.012 | 153.0 | 123.0 | 152.9511 | 122.9528 | .6072E-03 | .1369E-02 |
| 10.196 | 14.345 | .7451E+05 | 1.003 | 153.0 | 123.0 | 153.0351 | 122.7498 | .1064E-02 | .1497E-02 |
| 10.205 | 20.707 | .5245E+05 | .878 | 153.0 | 122.5 | 153.0705 | 122.5730 | .9473E-03 | .5041E-03 |
| 10.182 | 26.954 | .5144E+05 | .921 | 153.0 | 122.5 | 153.0857 | 122.3133 | .2306E-03 | .1451E-02 |
| 10.303 | 33.252 | .9954E+05 | 1.043 | 153.0 | 122.0 | 153.0869 | 122.1333 | .8868E-03 | .7959E-03 |
| 10.241 | 39.527 | .9549E+05 | 1.066 | 153.0 | 122.0 | 153.0826 | 121.9510 | .8079E-03 | .9406E-03 |
| 10.275 | 45.775 | .1054E+06 | 1.039 | 153.0 | 122.0 | 153.0369 | 121.6893 | .3885E-03 | .1239E-02 |
| 10.208 | 52.065 | .9137E+05 | .955 | 153.0 | 121.5 | 152.9636 | 121.5148 | .1439E-02 | .8444E-03 |
| 10.281 | 58.363 | .7471E+05 | 1.071 | 153.0 | 121.0 | 152.8678 | 121.2760 | .1000E-02 | .6804E-03 |
| 10.250 | 64.614 | .6897E+05 | 1.074 | 153.0 | 121.0 | 152.7618 | 121.0572 | .4870E-03 | .7469E-03 |
| 10.278 | 70.866 | .5803E+05 | 1.064 | 152.5 | 121.0 | 152.6145 | 120.9142 | .7447E-03 | .1072E-02 |
| 10.278 | 1.801 | .5227E+05 | 1.031 | 152.5 | 121.0 | 152.4579 | 120.7229 | .2925E-03 | .1205E-02 |
| 10.266 | 8.167 | .6660E+05 | .943 | 152.5 | 120.5 | 152.2985 | 120.6303 | .1382E-02 | .4093E-03 |
| 10.286 | 14.351 | .7038E+05 | .922 | 152.0 | 120.5 | 152.1410 | 120.5061 | .2884E-03 | .5113E-03 |
| 10.300 | 20.707 | .6902E+05 | .986 | 152.0 | 120.5 | 151.9550 | 120.3956 | .8703E-03 | .9233E-03 |
| 10.368 | 26.939 | .1065E+06 | 1.094 | 152.0 | 120.0 | 151.7320 | 120.2689 | .5403E-03 | .5487E-03 |
| 10.396 | 33.226 | .9715E+05 | 1.068 | 151.5 | 120.0 | 151.5378 | 120.1888 | .5919E-03 | .1374E-02 |
| 10.382 | 39.524 | .1005E+06 | 1.057 | 151.5 | 120.0 | 151.3238 | 120.1574 | .6263E-03 | .1270E-02 |
| 10.390 | 45.782 | .1132E+06 | 1.049 | 151.0 | 120.0 | 151.0970 | 120.1221 | .3468E-03 | .4054E-03 |
| 10.373 | 52.064 | .1148E+06 | 1.054 | 151.0 | 120.0 | 150.8623 | 120.0979 | .9517E-03 | .1423E-02 |
| 10.323 | 58.364 | .9965E+05 | 1.047 | 150.5 | 120.0 | 150.6718 | 120.1308 | .2274E-03 | .8437E-03 |
| 10.337 | 64.595 | .9564E+05 | 1.053 | 150.5 | 120.0 | 150.4771 | 120.2147 | .6765E-03 | .6807E-03 |
| 10.300 | 70.834 | .1210E+06 | 1.072 | 150.0 | 120.0 | 150.2630 | 120.3175 | .3104E-01 | .4334E-01 |
| 10.261 | 1.787 | .6991E+05 | .973 | 150.0 | 120.5 | 150.0304 | 120.4131 | .8723E-03 | .5891E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 10.267 | 8.111 | .111E+01 | .811 | 11.11 | 11.11 | 14.1191 | 120.511 | .111E-01 | .711E-01 |
| 10.247 | 14.356 | .7031E+05 | .983 | 149.5 | 120.5 | 149.6583 | 120.6709 | .547E-03 | .7754E-03 |
| 10.278 | 20.726 | .5561E+05 | 1.087 | 149.5 | 121.0 | 149.5014 | 120.7387 | .8195E-03 | .151E-02 |
| 10.252 | 26.966 | .5114E+05 | 1.075 | 149.5 | 121.0 | 149.3748 | 120.9466 | .5648E-03 | .1148E-02 |
| 10.283 | 33.274 | .5157E+05 | 1.029 | 149.0 | 121.0 | 149.2268 | 121.0924 | .1017E-02 | .5994E-03 |
| 10.289 | 39.536 | .7855E+05 | 1.021 | 149.0 | 121.5 | 149.1286 | 121.2731 | .1620E-01 | .2590E-01 |
| 10.272 | 45.797 | .8755E+05 | .949 | 149.0 | 121.5 | 149.0122 | 121.5353 | .8614E-03 | .8504E-03 |
| 10.266 | 52.062 | .1163E+06 | 1.066 | 149.0 | 122.0 | 148.9681 | 121.6905 | .1220E-01 | .1937E-01 |
| 10.292 | 58.291 | .9614E+05 | 1.072 | 149.0 | 122.0 | 148.9226 | 121.9430 | .6277E-03 | .8917E-03 |
| 10.224 | 64.614 | .9436E+05 | 1.054 | 149.0 | 122.0 | 148.8819 | 122.1212 | .5958E-03 | .1218E-02 |
| 10.219 | 70.887 | .4534E+05 | .922 | 149.0 | 122.5 | 148.8994 | 122.3443 | .5014E-03 | .1651E-02 |
| 10.216 | 1.806 | .5110E+05 | .901 | 149.0 | 122.5 | 148.9324 | 122.6245 | .4700E-03 | .7231E-03 |
| 10.252 | 8.184 | .7780E+05 | 1.032 | 149.0 | 123.0 | 148.9924 | 122.7962 | .6234E-03 | .1651E-02 |
| 10.219 | 14.377 | .9199E+05 | 1.056 | 149.0 | 123.0 | 149.0431 | 122.9864 | .6773E-03 | .8792E-03 |
| 10.208 | 20.730 | .9799E+05 | 1.046 | 149.0 | 123.0 | 149.1190 | 123.1821 | .1021E-02 | .2100E-02 |
| 10.199 | 26.996 | .1042E+06 | .978 | 149.0 | 123.5 | 149.2456 | 123.3670 | .8268E-03 | .3521E-03 |
| 10.219 | 33.241 | .1017E+06 | .955 | 149.5 | 123.5 | 149.3629 | 123.5805 | .5155E-03 | .1156E-02 |
| 10.323 | 39.540 | .1215E+06 | 1.031 | 149.5 | 124.0 | 149.5219 | 123.6793 | .7504E-02 | .1538E-01 |
| 10.306 | 45.807 | .1121E+06 | 1.023 | 149.5 | 124.0 | 149.6883 | 123.8493 | .2725E-03 | .7779E-03 |
| 10.337 | 52.097 | .1210E+06 | 1.050 | 150.0 | 124.0 | 149.8558 | 123.9728 | .6475E-03 | .9273E-03 |
| 10.314 | 58.358 | .1152E+06 | 1.061 | 150.0 | 124.0 | 150.0507 | 124.0948 | .1032E-02 | .7108E-03 |
| 10.345 | 64.625 | .1127E+06 | 1.059 | 150.0 | 124.0 | 150.2570 | 124.2115 | .5191E-03 | .5255E-03 |
| 10.339 | 70.687 | .8735E+05 | 1.060 | 150.5 | 124.0 | 150.4428 | 124.2724 | .1081E-01 | .445E-01 |
| 10.278 | 70.830 | .8927E+05 | 1.060 | 150.5 | 124.5 | 150.4508 | 124.2755 | .1090E-01 | .4586E-01 |
| 10.227 | 1.809 | .6696E+05 | 1.001 | 150.5 | 124.5 | 150.6776 | 124.3060 | .7959E-03 | .7977E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.00155 | -.00142 | -.00775 | -.00711 | -.02699 | .01758 |
| 1 | .01240 | .01780 | .02599 | -.01056 | -.04504 | .01544 |
| 2 | .00497 | .00375 | -.00681 | -.00447 | .00818 | .01514 |
| 3 | -.00196 | .00625 | .02601 | -.00723 | .00744 | .02211 |
| 4 | -.02156 | -.02037 | .00500 | .02268 | .00965 | -.02459 |
| 5 | .04846 | .03646 | -.00642 | -.04374 | -.02264 | -.00600 |
| 6 | -.03303 | .02386 | -.02005 | .01535 | .00908 | -.01072 |
| 7 | .00894 | .00302 | .02624 | .00844 | .00871 | -.01578 |
| 8 | .00079 | .01050 | -.00773 | .02337 | -.02918 | .00012 |
| 9 | -.01521 | -.00782 | .01563 | .01634 | .01721 | |

x0= 150.9995 y0= 122.2364 r0= 2.09443355 std.dev.= .02006811

HISTOGRAM DEVIATION >= e

| | | | | | | |
|------|------|------|------|------|------|------------|
| 0.05 | 0.04 | 0.03 | 0.02 | 0.01 | 0.00 | bad points |
| 1 | 3 | 2 | 14 | 14 | 26 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|--------|
| 0 | .00078 | .00096 | -.00533 | -.00468 | -.00476 | .01886 |
| 1 | .01472 | | .02812 | -.00957 | -.00434 | .01385 |
| 2 | .00637 | .00497 | -.00585 | -.00371 | .00973 | .01532 |
| 3 | .00193 | .00598 | .02547 | -.00500 | .00640 | .01300 |
| 4 | -.02298 | -.02200 | .00317 | .02070 | .00752 | .01856 |
| 5 | .04612 | .03407 | -.00886 | | -.03207 | .05237 |
| 6 | -.03533 | .02163 | -.02216 | .01337 | | .00260 |
| 7 | | .00182 | .02524 | .00768 | .00827 | .01096 |
| 8 | .00078 | .01073 | -.00724 | .02414 | | .01456 |
| 9 | -.01380 | -.00619 | .01745 | | | .00223 |

v0= 150.9986 v0= 122.2341 r0= 2.09443203 std.dev.= .01953022

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 2 | 4 | 10 | 11 | 25 | 7 |

ORIGINAL PAGE IS
OF POOR QUALITY

TM104

Disk 27-A Track data file TMT001

NHR0:
 Information delay: Coarse 1.0 Fine 1.0 Track 44.0
 Threshold: .1160E+00 .4564E+00 .1344E+02
 .1838E+06 .9190E+05 .7352E+06

Constants:
 Displacements: .29800 .25500 .36700 .30200
 0.00000 0.00000 0.00000 0.00000

| time | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 10.210 | 14.354 | .2103E+05 | 2.789 | 151.0 | 124.5 | 151.1333 | 124.3293 | .8177E-03 | .3114E-03 |
| 10.194 | 20.719 | .2070E+05 | 2.827 | 151.5 | 124.5 | 151.3552 | 124.3063 | .5951E-03 | .1132E-02 |
| 10.222 | 26.961 | .2112E+05 | 2.843 | 151.5 | 124.5 | 151.5503 | 124.2554 | .5571E-03 | .5495E-03 |
| 10.261 | 33.231 | .2837E+05 | 2.833 | 151.5 | 124.0 | 151.7246 | 124.1916 | .4857E-03 | .1372E-02 |
| 10.255 | 39.507 | .3318E+05 | 2.822 | 152.0 | 124.0 | 151.9395 | 124.0782 | .8147E-03 | .4002E-03 |
| 10.255 | 45.749 | .3405E+05 | 2.806 | 152.0 | 124.0 | 152.1736 | 123.9902 | .8748E-03 | .1284E-02 |
| 10.281 | 52.077 | .3033E+05 | 2.860 | 152.5 | 124.0 | 152.3400 | 123.8674 | .5610E-03 | .8812E-03 |
| 10.160 | 58.355 | .2732E+05 | 2.848 | 152.5 | 123.5 | 152.4870 | 123.7607 | .4381E-03 | .8842E-03 |
| 10.140 | 64.601 | .2844E+05 | 2.748 | 152.5 | 123.5 | 152.6293 | 123.6002 | .2724E-03 | .8487E-03 |
| 10.179 | 70.863 | .3118E+05 | 2.772 | 153.0 | 123.5 | 152.7395 | 123.4030 | .4657E-02 | .2116E-02 |
| 10.143 | 1.815 | .2942E+05 | 2.813 | 153.0 | 123.0 | 152.8438 | 123.1424 | .6078E-03 | .9178E-03 |
| 10.163 | 8.162 | .2708E+05 | 2.797 | 153.0 | 123.0 | 152.9613 | 122.9475 | .9253E-03 | .9931E-03 |
| 10.149 | 14.359 | .2298E+05 | 2.789 | 153.0 | 123.0 | 153.0428 | 122.7484 | .1155E-02 | .7881E-03 |
| 10.188 | 20.716 | .1839E+05 | 2.674 | 153.0 | 122.5 | 153.0734 | 122.5665 | .8138E-03 | .4540E-03 |
| 10.210 | 26.958 | .1816E+05 | 2.717 | 153.0 | 122.5 | 153.0922 | 122.3122 | .8066E-03 | .1202E-02 |
| 10.222 | 33.265 | .2893E+05 | 2.832 | 153.0 | 122.0 | 153.0931 | 122.1242 | .9297E-03 | .1731E-02 |
| 10.233 | 39.529 | .2839E+05 | 2.855 | 153.0 | 122.0 | 153.0891 | 121.9479 | .6753E-03 | .1266E-02 |
| 10.250 | 45.809 | .3080E+05 | 2.839 | 153.0 | 122.0 | 153.0424 | 121.6850 | .1183E-02 | .7435E-03 |
| 10.230 | 52.057 | .2629E+05 | 2.756 | 153.0 | 121.5 | 152.9678 | 121.5152 | .1187E-02 | .7737E-03 |
| 10.230 | 58.307 | .2359E+05 | 2.861 | 153.0 | 121.0 | 152.8723 | 121.2696 | .4371E-03 | .1393E-02 |
| 10.222 | 64.613 | .2247E+05 | 2.865 | 153.0 | 121.0 | 152.7672 | 121.0508 | .6897E-03 | .1172E-02 |
| 10.300 | 70.859 | .1962E+05 | 2.855 | 152.5 | 121.0 | 152.6192 | 120.9156 | .1403E-02 | .5895E-03 |
| 10.323 | 1.813 | .1869E+05 | 2.828 | 152.5 | 121.0 | 152.4643 | 120.7266 | .5555E-03 | .1698E-02 |
| 10.233 | 8.151 | .2110E+05 | 2.733 | 152.5 | 120.5 | 152.3067 | 120.6116 | .5278E-03 | .1113E-02 |
| 10.269 | 14.364 | .2190E+05 | 2.698 | 152.0 | 120.5 | 152.1436 | 120.4932 | .6017E-03 | .1671E-02 |
| 10.255 | 20.725 | .2185E+05 | 2.764 | 152.0 | 120.5 | 151.9631 | 120.3852 | .9619E-03 | .1086E-02 |
| 10.269 | 26.958 | .3074E+05 | 2.873 | 152.0 | 120.0 | 151.7421 | 120.2541 | .1281E-02 | .9082E-03 |
| 10.320 | 33.263 | .2819E+05 | 2.851 | 151.5 | 120.0 | 151.5345 | 120.1757 | .4973E-03 | .9466E-03 |
| 10.323 | 39.523 | .2878E+05 | 2.837 | 151.5 | 120.0 | 151.3293 | 120.1465 | .3928E-03 | .5260E-03 |
| 10.303 | 45.828 | .3217E+05 | 2.822 | 151.0 | 120.0 | 151.1008 | 120.1114 | .6278E-03 | .9714E-03 |
| 10.289 | 52.097 | .3199E+05 | 2.827 | 151.0 | 120.0 | 150.8710 | 120.0906 | .6529E-03 | .8127E-03 |
| 10.314 | 58.364 | .2895E+05 | 2.829 | 150.5 | 120.0 | 150.6637 | 120.1200 | .1091E-02 | .1932E-02 |
| 10.306 | 64.639 | .2815E+05 | 2.838 | 150.5 | 120.0 | 150.4751 | 120.2022 | .7058E-03 | .9128E-03 |
| 10.278 | 70.848 | .2807E+05 | 2.812 | 150.5 | 120.0 | 150.2757 | 120.1030 | .5347E-03 | .9495E-03 |
| 10.269 | 1.819 | .2140E+05 | 2.749 | 150.0 | 120.5 | 150.0371 | 120.4012 | .9491E-03 | .1185E-02 |

ORIGINAL PAGE IS
 OF POOR QUALITY

TMT001

| | | | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|--------|-----|-----|
| 10.1 | 1 | .4E+0 | 2. | 0 | 120.5 | 120.5 | 149.502 | 120.5 | .14E | .6 | 0.0 |
| 10.275 | 14.364 | .2183E+05 | 2.770 | 149.5 | 120.5 | 149.6497 | 120.6459 | .8397E-03 | .6138 | 0.0 | |
| 10.247 | 20.743 | .1830E+05 | 2.873 | 149.5 | 121.0 | 149.5061 | 120.7413 | .1167E-02 | .1124 | 0.0 | |
| 10.266 | 26.955 | .1827E+05 | 2.864 | 149.5 | 121.0 | 149.3912 | 120.9451 | .3091E-03 | .6077 | 0.0 | |
| 10.261 | 33.242 | .1850E+05 | 2.812 | 149.0 | 121.0 | 149.2238 | 121.0838 | .6395E-03 | .9200 | 0.0 | |
| 10.306 | 39.508 | .2470E+05 | 2.819 | 149.0 | 121.5 | 149.1306 | 121.2687 | .2198E-01 | .2634 | -01 | |
| 10.311 | 45.793 | .2546E+05 | 2.743 | 149.0 | 121.5 | 149.0342 | 121.5345 | .6604E-03 | .6454 | -03 | |
| 10.269 | 52.078 | .3307E+05 | 2.863 | 149.0 | 122.0 | 148.9761 | 121.6924 | .9071E-02 | .1714E | -01 | |
| 10.269 | 58.367 | .2852E+05 | 2.861 | 149.0 | 122.0 | 148.9292 | 121.9426 | .1215E-02 | .5410E | -03 | |
| 10.244 | 64.628 | .2829E+05 | 2.842 | 149.0 | 122.0 | 148.8856 | 122.1154 | .8509E-03 | .9013E | -03 | |
| 10.224 | 70.830 | .1659E+05 | 2.715 | 149.0 | 122.5 | 148.9059 | 122.3424 | .1304E-02 | .1251E | -02 | |
| 10.283 | 1.798 | .1769E+05 | 2.693 | 149.0 | 122.5 | 148.9383 | 122.6161 | .5275E-03 | .4849E | -03 | |
| 10.230 | 8.172 | .2344E+05 | 2.815 | 149.0 | 123.0 | 148.9975 | 122.7975 | .9720E-03 | .1054 | -02 | |
| 10.250 | 14.369 | .2621E+05 | 2.834 | 149.0 | 123.0 | 149.0426 | 122.9800 | .1504E-02 | .1722 | -02 | |
| 10.230 | 20.719 | .2717E+05 | 2.825 | 149.0 | 123.0 | 149.1159 | 123.1735 | .1069E-02 | .1537E | -02 | |
| 10.202 | 26.973 | .2815E+05 | 2.773 | 149.0 | 123.5 | 149.2447 | 123.3674 | .9141E-03 | .1004E | -02 | |
| 10.174 | 33.229 | .2785E+05 | 2.759 | 149.5 | 123.5 | 149.3697 | 123.5767 | .9154E-03 | .8103E | -03 | |
| 10.264 | 39.510 | .3224E+05 | 2.833 | 149.5 | 124.0 | 149.5235 | 123.6982 | .7969E-02 | .3954 | -01 | |
| 10.300 | 45.740 | .3119E+05 | 2.825 | 149.5 | 124.0 | 149.6860 | 123.8524 | .3615E-03 | .1079E | -02 | |
| 10.255 | 52.059 | .3333E+05 | 2.839 | 150.0 | 124.0 | 149.8578 | 123.9692 | .9551E-03 | .1108E | -02 | |
| 10.325 | 58.345 | .3199E+05 | 2.844 | 150.0 | 124.0 | 150.0461 | 124.0883 | .1780E-02 | .8230E | -03 | |
| 10.334 | 64.593 | .2918E+05 | 2.851 | 150.5 | 124.0 | 150.2596 | 124.2116 | .4400E-02 | .4563E | -02 | |
| 10.244 | 70.873 | .2127E+05 | 2.843 | 150.5 | 124.5 | 150.4606 | 124.2433 | .7056E-03 | .1784E | -02 | |
| 10.297 | 1.805 | .2140E+05 | 2.803 | 150.5 | 124.5 | 150.6741 | 124.3106 | .4517E-03 | .1155E | -02 | |
| 10.309 | 8.164 | .2172E+05 | 2.797 | 151.0 | 124.5 | 150.9124 | 124.3362 | .6347E-03 | .5798E | -03 | |

ORIGINAL PAGE IS
OF POOR QUALITY

TR81-04

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .00388 | .00416 | -.00166 | -.00976 | -.02806 | .01377 |
| 1 | .01376 | .03179 | .02634 | -.00474 | -.04531 | -.01464 |
| 2 | .00401 | .00234 | -.00918 | -.00716 | .00520 | .01132 |
| 3 | -.00877 | .00274 | .02788 | -.01572 | -.00219 | -.02047 |
| 4 | -.02060 | -.01855 | .01160 | .02411 | .01128 | .02342 |
| 5 | .04625 | .04001 | -.00159 | -.03718 | -.02845 | -.04697 |
| 6 | -.01301 | .01462 | -.02736 | .02004 | .00831 | -.00341 |
| 7 | .00049 | -.00297 | .02384 | .00036 | .00359 | .01277 |
| 8 | .00187 | .01203 | -.00343 | .01920 | -.01350 | -.00837 |
| 9 | -.01585 | -.00803 | .01774 | -.01383 | .00732 | .01092 |

x0= 151.0047 y0= 122.2310 r0= 2.09834576 std.dev.= .01891294

HISTOGRAM DEVIATION >= e

| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|----|-----|-----|-----|-----|-----|------|------------|
| | 0 | 4 | 2 | 11 | 18 | 25 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

TM81-04

| | | | delta ri | | | |
|---|---------|---------|----------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | .00334 | .00584 | -.00217 | -.01025 | -.02852 | .01334 |
| 1 | .01337 | .03143 | .02601 | -.00502 | -.04604 | -.01482 |
| 2 | .00388 | .00224 | -.00922 | -.00716 | .00524 | .01142 |
| 3 | -.00864 | .00243 | .02310 | -.01547 | -.00190 | -.02016 |
| 4 | -.02027 | -.01820 | .01196 | .02448 | .01166 | .02380 |
| 5 | .04662 | .04037 | -.00125 | -.03686 | -.02815 | -.04671 |
| 6 | -.01278 | .01482 | -.02721 | .02015 | | -.00839 |
| 7 | | -.00305 | .02372 | .00320 | .00337 | -.01304 |
| 8 | .00156 | .01168 | -.00381 | .01878 | | -.00885 |
| 9 | -.01635 | -.00855 | .01721 | -.01437 | .00678 | .01017 |

x0= 151.0046 y0= 122.2315 r0= 2.09842896 std.dev.= .01928557

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 4 | 2 | 11 | 18 | 22 | 3 |

ORIGINAL PAGE IS
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NDRN: Coarse Fine Track
 1.0 1.0 192.0
 Integration delay: .1140E+00 .4564E+00 .7274E+00
 Thresholds: .1838E+06 .9190E+05 .7352E+06

Constants: .29800 .25500 .36700 .30200
 Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|---------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 10.272 | 8.165 | .2754E+05 | 6.047 | 151.0 | 124.5 | 150.8891 | 124.3457 | .2221E-02 | .4772E-02 |
| 10.275 | 14.381 | .2757E+05 | 6.034 | 151.0 | 124.5 | 151.0995 | 124.3331 | .3697E-02 | .3865E-02 |
| 10.278 | 20.716 | .2729E+05 | 6.082 | 151.5 | 124.5 | 151.3555 | 124.3139 | .2744E-02 | .1211E-02 |
| 10.309 | 26.945 | .2736E+05 | 6.098 | 151.5 | 124.5 | 151.5470 | 124.2636 | .2105E-02 | .3651E-02 |
| 10.303 | 33.248 | .2773E+05 | 6.077 | 151.5 | 124.0 | 151.7081 | 124.1628 | .2114E-02 | .4175E-02 |
| 10.300 | 39.531 | .2896E+05 | 6.094 | 152.0 | 124.0 | 151.9180 | 124.0229 | .3911E-02 | .7678E-02 |
| 10.311 | 45.812 | .2899E+05 | 6.072 | 152.0 | 124.0 | 152.1591 | 123.9459 | .2366E-02 | .3213E-02 |
| 10.323 | 52.074 | .2856E+05 | 6.136 | 152.5 | 124.0 | 152.3616 | 123.8260 | .2714E-02 | .4998E-02 |
| 10.216 | 58.370 | .2880E+05 | 6.168 | 152.5 | 123.5 | 152.5057 | 123.7719 | .3134E-02 | .6303E-02 |
| 10.188 | 64.618 | .2891E+05 | 6.066 | 152.5 | 123.5 | 152.6456 | 123.6052 | .6738E-02 | .4463E-02 |
| 10.208 | 70.866 | .2893E+05 | 6.077 | 152.5 | 123.5 | 152.7610 | 123.3938 | .2677E-02 | .1127E-02 |
| 10.194 | 1.784 | .2550E+05 | 6.120 | 153.0 | 123.0 | 152.8360 | 123.1956 | .1521E-02 | .5327E-02 |
| 10.224 | 3.161 | .2537E+05 | 6.100 | 153.0 | 123.0 | 152.9588 | 122.9874 | .3080E-02 | .2177E-02 |
| 10.222 | 14.360 | .2506E+05 | 6.097 | 153.0 | 123.0 | 153.0484 | 122.7755 | .1858E-02 | .6472E-02 |
| 10.238 | 20.720 | .2478E+05 | 6.011 | 153.0 | 122.5 | 153.0816 | 122.5682 | .2020E-02 | .4215E-02 |
| 10.222 | 26.948 | .2476E+05 | 6.058 | 153.0 | 122.5 | 153.1067 | 122.2958 | .3331E-02 | .3722E-02 |
| 10.283 | 33.249 | .2450E+05 | 6.053 | 153.0 | 122.0 | 153.0389 | 122.0531 | .2494E-02 | .2153E-02 |
| 10.258 | 39.532 | .2453E+05 | 6.081 | 153.0 | 122.0 | 153.0377 | 121.8887 | .3046E-02 | .2689E-02 |
| 10.278 | 45.803 | .2470E+05 | 6.072 | 153.0 | 121.5 * | 153.0063 | 121.7332 | .5609E-02 | .4391E-01 |
| 10.275 | 52.085 | .2473E+05 | 6.021 | 153.0 | 121.5 | 152.9471 | 121.4983 | .2582E-02 | .2974E-02 |
| 10.275 | 58.374 | .2459E+05 | 6.120 | 153.0 | 121.0 | 152.8495 | 121.2672 | .1038E-02 | .1900E-02 |
| 10.205 | 64.604 | .2702E+05 | 6.107 | 152.5 | 121.0 * | 152.7308 | 121.0559 | .6133E-02 | .6672E-02 |
| 10.269 | 70.841 | .2780E+05 | 6.103 | 152.5 | 121.0 | 152.6163 | 120.9236 | .3590E-02 | .3264E-02 |
| 10.286 | 1.783 | .2772E+05 | 6.077 | 152.5 | 121.0 | 152.4671 | 120.7346 | .9692E-03 | .4920E-02 |
| 10.269 | 8.166 | .2782E+05 | 5.978 | 152.5 | 120.5 | 152.3080 | 120.6107 | .3350E-02 | .2423E-02 |
| 10.295 | 14.355 | .2783E+05 | 5.923 | 152.0 | 120.5 | 152.1449 | 120.5006 | .3544E-02 | .1889E-02 |
| 10.236 | 20.704 | .2786E+05 | 5.989 | 152.0 | 120.5 | 151.9694 | 120.3959 | .3057E-02 | .2996E-02 |
| 10.339 | 26.947 | .2821E+05 | 6.157 | 151.5 | 120.0 * | 151.7043 | 120.2724 | .2124E-01 | .7142E-01 |
| 10.323 | 33.253 | .2768E+05 | 6.103 | 151.5 | 120.0 | 151.4998 | 120.1727 | .1494E-02 | .2584E-02 |
| 10.261 | 39.531 | .2765E+05 | 6.097 | 151.5 | 120.0 | 151.2943 | 120.1466 | .2480E-02 | .2544E-02 |
| 10.281 | 45.789 | .2827E+05 | 6.063 | 151.0 | 120.0 | 151.0763 | 120.1366 | .2386E-02 | .2204E-02 |
| 10.289 | 52.065 | .2822E+05 | 6.070 | 151.0 | 120.0 | 150.8723 | 120.1209 | .1284E-02 | .5385E-02 |
| 10.323 | 58.358 | .2479E+05 | 6.100 | 150.5 | 120.0 | 150.6324 | 120.1353 | .1037E-02 | .2777E-02 |
| 10.331 | 64.586 | .2485E+05 | 6.119 | 150.5 | 120.0 | 150.4334 | 120.2185 | .1389E-02 | .5017E-02 |
| 10.297 | 70.834 | .2482E+05 | 6.116 | 150.5 | 120.0 | 150.2337 | 120.1278 | .2889E-02 | .1947E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|---------|----------|----------|-----------|-----------|
| 3.26 | 1.11 | .2441E+05 | 5.949 | 150.0 | 120.5 | 149.8661 | 120.5159 | .1995E-02 | .2469E-02 |
| 10.255 | 8.170 | .2448E+05 | 6.061 | 149.5 | 120.5 | 149.6593 | 120.6537 | .1806E-02 | .1391E-02 |
| 10.283 | 14.364 | .2452E+05 | 6.166 | 149.5 | 121.0 | 149.5292 | 120.7285 | .1379E-02 | .5842E-02 |
| 10.295 | 20.720 | .2449E+05 | 6.148 | 149.5 | 121.0 | 149.3943 | 120.9386 | .2461E-02 | .4498E-02 |
| 10.278 | 33.243 | .2458E+05 | 6.122 | 149.5 | 121.0 | 149.2814 | 121.1060 | .2429E-02 | .2819E-02 |
| 10.272 | 39.528 | .2456E+05 | 6.098 | 149.0 | 121.5 * | 149.1145 | 121.2576 | .3489E-01 | .4195E-01 |
| 10.264 | 45.773 | .2445E+05 | 6.022 | 149.0 | 121.5 | 149.0125 | 121.5455 | .2587E-02 | .1745E-02 |
| 10.275 | 52.071 | .2453E+05 | 6.108 | 149.0 | 121.5 | 148.9408 | 121.8070 | .1569E-02 | .4462E-02 |
| 10.314 | 58.361 | .2513E+05 | 6.145 | 149.0 | 122.0 | 148.9022 | 121.8933 | .5184E-02 | .5576E-02 |
| 10.250 | 64.582 | .2495E+05 | 6.128 | 149.0 | 122.0 | 148.8595 | 122.0777 | .3794E-02 | .4577E-02 |
| 10.179 | 70.869 | .2370E+05 | 5.971 | 149.0 | 122.5 | 148.9203 | 122.3316 | .3283E-02 | .4124E-02 |
| 10.210 | 1.766 | .2376E+05 | 5.953 | 149.0 | 122.5 | 148.9544 | 122.5973 | .3715E-02 | .2709E-02 |
| 10.185 | 8.126 | .2409E+05 | 6.042 | 149.0 | 123.0 | 149.0066 | 122.8508 | .3268E-02 | .2899E-02 |
| 10.160 | 14.356 | .2422E+05 | 6.065 | 149.0 | 123.0 | 149.0438 | 123.0195 | .3339E-02 | .5003E-02 |
| 10.179 | 20.725 | .2421E+05 | 6.055 | 149.0 | 123.0 | 149.1154 | 123.1971 | .3725E-02 | .4951E-02 |
| 10.210 | 26.957 | .2444E+05 | 6.033 | 149.0 | 123.5 | 149.2529 | 123.3571 | .1383E-01 | .1313E-01 |
| 10.213 | 33.235 | .2478E+05 | 6.046 | 149.5 | 123.5 | 149.3479 | 123.5614 | .2188E-02 | .3729E-02 |
| 10.210 | 39.524 | .2478E+05 | 6.102 | 149.5 | 123.5 | 149.4912 | 123.7584 | .3821E-02 | .5681E-02 |
| 10.286 | 45.820 | .2424E+05 | 6.005 | 149.5 | 124.0 | 149.6543 | 123.8731 | .2883E-02 | .3274E-02 |
| 10.303 | 52.068 | .2434E+05 | 6.022 | 150.0 | 124.0 | 149.8563 | 123.9571 | .1197E-02 | .2800E-02 |
| 10.306 | 58.367 | .2425E+05 | 6.024 | 150.0 | 124.0 | 150.0264 | 124.0562 | .1398E-02 | .9918E-03 |
| 10.297 | 64.607 | .2426E+05 | 6.037 | 150.0 | 124.0 * | 150.2240 | 124.1654 | .1140E-01 | .1133E-01 |
| 10.281 | 70.852 | .2411E+05 | 6.076 | 150.5 | 124.5 | 150.4308 | 124.2760 | .3663E-02 | .4240E-02 |
| 10.286 | 1.808 | .2412E+05 | 6.042 | 150.5 | 124.5 | 150.6371 | 124.3359 | .1713E-02 | .3268E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .01399 | .00132 | .01071 | .00310 | -.04375 | -.02804 |
| 1 | -.02943 | -.00116 | .05677 | .04721 | .01459 | -.02067 |
| 2 | .00624 | .02698 | .01712 | .01724 | -.04280 | -.02250 |
| 3 | -.02112 | -.00704 | -.00113 | .00608 | -.00688 | .01023 |
| 4 | -.00228 | -.01019 | -.00959 | -.00376 | .03294 | .01953 |
| 5 | .01073 | .02749 | .04069 | .00172 | -.03675 | -.01760 |
| 6 | -.03401 | -.02103 | .01078 | -.03168 | -.03970 | .02717 |
| 7 | .00615 | .00495 | .02696 | .04732 | -.01753 | -.02263 |
| 8 | -.01411 | .00694 | .01509 | -.02467 | .01750 | .04293 |
| 9 | .01873 | -.03383 | -.03591 | -.02015 | .01847 | .03192 |

$\mu_0 = 150.9954$ $\mu_0 = 122.2396$ $r_0 = 2.09474182$ $\text{std. dev.} = .02652060$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 2 | 6 | 8 | 12 | 17 | 15 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .01200 | -.00073 | .00860 | .00095 | -.04591 | -.02020 |
| 1 | -.03158 | -.00328 | .05467 | .04517 | .01262 | -.02156 |
| 2 | .00445 | .02530 | .01562 | .01582 | -.04406 | -.01367 |
| 3 | | -.00793 | -.00134 | .00583 | -.00731 | .00005 |
| 4 | -.00244 | -.01023 | -.00951 | | .03317 | .01995 |
| 5 | .01122 | .02804 | .04129 | .00236 | -.03609 | -.01694 |
| 6 | -.03335 | -.02041 | .01138 | -.03115 | -.03923 | |
| 7 | .00640 | .00507 | .02703 | .04729 | -.01772 | -.02798 |
| 8 | -.01464 | .00630 | .01432 | | .01644 | .04171 |
| 9 | .01739 | -.03529 | -.03749 | | .01666 | .03803 |

x0= 150.9960 y0= 122.2409 r0= 2.09549522 std.dev.= .02694453

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 2 | 6 | 9 | 7 | 15 | 16 | 5 |

ORIGINAL PAGE IS
OF POOR QUALITY.

Disk 27-A Track data file ID01A05

NDRN: Coarse Fine Track
 1.0 1.0 16.0
 Integration delay: .1160E+00 .4564E+00 .1344E-02
 Thresholds: .1838E+06 .9190E+05 .7352E+06

Constants: .29800 .25500 .36700 .30200
 Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 20.010 | 8.167 | .9225E+05 | 1.006 | 151.0 | 124.5 | 150.8716 | 124.3498 | .4840E-03 | .5717E-03 |
| 20.038 | 14.359 | .9199E+05 | 1.005 | 151.0 | 124.5 | 151.0941 | 124.3373 | .5961E-03 | .6790E-03 |
| 19.979 | 20.698 | .8870E+05 | 1.026 | 151.5 | 124.5 | 151.3127 | 124.3071 | .6776E-03 | .7162E-03 |
| 20.069 | 26.954 | .9003E+05 | 1.052 | 151.5 | 124.5 | 151.5107 | 124.2593 | .6478E-03 | .1125E-02 |
| 20.102 | 33.241 | .1206E+06 | 1.032 | 151.5 | 124.0 | 151.6931 | 124.2091 | .3527E-03 | .7950E-03 |
| 20.102 | 39.513 | .1403E+06 | 1.032 | 152.0 | 124.0 | 151.8908 | 124.0829 | .7593E-03 | .1298E-02 |
| 20.113 | 45.806 | .1450E+06 | 1.016 | 152.0 | 124.0 | 152.1296 | 123.9944 | .2967E-03 | .6058E-03 |
| 20.094 | 52.088 | .1273E+06 | 1.059 | 152.5 | 124.0 | 152.3033 | 123.8759 | .5825E-03 | .6894E-03 |
| 20.021 | 58.365 | .1197E+06 | 1.062 | 152.5 | 123.5 | 152.4432 | 123.7465 | .1279E-02 | .3743E-01 |
| 20.001 | 64.634 | .1247E+06 | .963 | 152.5 | 123.5 | 152.5908 | 123.6037 | .6772E-03 | .1043E-02 |
| 19.968 | 70.873 | .1245E+06 | .962 | 152.5 | 123.5 | 152.7166 | 123.4075 | .1063E-02 | .1010E-02 |
| 19.996 | 1.777 | .1309E+06 | 1.026 | 153.0 | 123.0 | 152.7971 | 123.1595 | .9024E-03 | .4899E-03 |
| 19.937 | 8.155 | .1190E+06 | 1.010 | 153.0 | 123.0 | 152.9130 | 122.9517 | .7999E-03 | .3211E-03 |
| 19.987 | 14.361 | .9861E+05 | 1.012 | 153.0 | 123.0 | 153.0031 | 122.7515 | .3385E-03 | .1145E-02 |
| 19.979 | 20.720 | .7566E+05 | .894 | 153.0 | 122.5 | 153.0377 | 122.5803 | .5320E-03 | .4503E-03 |
| 19.998 | 26.959 | .7442E+05 | .935 | 153.0 | 122.5 | 153.0538 | 122.3213 | .6239E-03 | .6237E-03 |
| 20.032 | 33.250 | .1204E+06 | 1.053 | 153.0 | 122.0 | 153.0498 | 122.1324 | .8441E-03 | .8887E-03 |
| 20.032 | 39.527 | .1176E+06 | 1.078 | 153.0 | 122.0 | 153.0486 | 121.9524 | .6318E-03 | .9644E-03 |
| 20.026 | 45.787 | .1277E+06 | 1.050 | 153.0 | 122.0 | 153.0022 | 121.6918 | .9683E-03 | .1243E-02 |
| 19.968 | 52.070 | .1144E+06 | .963 | 153.0 | 121.5 | 152.9302 | 121.5279 | .5989E-03 | .7404E-03 |
| 20.055 | 58.364 | .9967E+05 | 1.072 | 153.0 | 121.0 | 152.8338 | 121.2864 | .6357E-03 | .9683E-03 |
| 20.049 | 64.624 | .7614E+05 | 1.063 | 152.5 | 121.0 | 152.7019 | 121.0607 | .6490E-03 | .6212E-03 |
| 20.024 | 70.859 | .7953E+05 | 1.075 | 152.5 | 121.0 | 152.5794 | 120.9231 | .5469E-03 | .7067E-03 |
| 20.038 | 1.776 | .7321E+05 | 1.051 | 152.5 | 121.0 | 152.4212 | 120.7329 | .7062E-03 | .7565E-03 |
| 20.055 | 8.163 | .8942E+05 | .959 | 152.5 | 120.5 | 152.2673 | 120.6358 | .1057E-02 | .2217E-02 |
| 20.043 | 14.350 | .9209E+05 | .932 | 152.0 | 120.5 | 152.1078 | 120.5203 | .9466E-03 | .1014E-02 |
| 20.032 | 20.716 | .9122E+05 | .989 | 152.0 | 120.5 | 151.9191 | 120.4063 | .5435E-03 | .1240E-02 |
| 20.069 | 26.954 | .1157E+06 | 1.082 | 151.5 | 120.0 | 151.7010 | 120.2822 | .6155E-03 | .1355E-02 |
| 20.071 | 33.234 | .1179E+06 | 1.077 | 151.5 | 120.0 | 151.4992 | 120.2018 | .5135E-03 | .9036E-03 |
| 20.099 | 39.518 | .1215E+06 | 1.062 | 151.5 | 120.0 | 151.2876 | 120.1678 | .7679E-03 | .7034E-03 |
| 20.069 | 45.784 | .1338E+06 | 1.056 | 151.0 | 120.0 | 151.0590 | 120.1255 | .9119E-03 | .2064E-03 |
| 20.080 | 52.068 | .1361E+06 | 1.054 | 151.0 | 120.0 | 150.8243 | 120.1042 | .1370E-02 | .7713E-03 |
| 20.069 | 58.367 | .1213E+06 | 1.054 | 150.5 | 120.0 | 150.6395 | 120.1452 | .6739E-03 | .1162E-02 |
| 20.111 | 64.622 | .1183E+06 | 1.055 | 150.5 | 120.0 | 150.4402 | 120.1238 | .7614E-03 | .3030E-02 |
| 20.024 | 70.841 | .9492E+05 | 1.005 | 150.0 | 120.5 | 150.2178 | 120.2890 | .6323E-03 | .1060E-02 |

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| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 20.03 | 1. | .9291E+05 | .937 | 150.0 | 120.5 | 149.8031 | 120.5637 | .5459E-03 | .6027E-03 |
| 20.046 | 8.166 | .9250E+05 | 1.004 | 149.5 | 120.5 | 149.6227 | 120.6773 | .5130E-03 | .6347E-03 |
| 20.021 | 14.371 | .7654E+05 | 1.096 | 149.5 | 121.0 | 149.4677 | 120.7496 | .4859E-03 | .7487E-03 |
| 20.026 | 20.726 | .7294E+05 | 1.073 | 149.5 | 121.0 | 149.3419 | 120.9577 | .4234E-03 | .6113E-03 |
| 20.032 | 26.969 | | | | | | | | |
| 20.063 | 33.263 | .7357E+05 | 1.026 | 149.0 | 121.0 | 149.1909 | 121.0987 | .1194E-02 | .1899E-02 |
| 20.071 | 39.543 | .1035E+06 | 1.025 | 149.0 | 121.5 | 149.0949 | 121.2759 | .1294E-01 | .1363E-01 |
| 20.074 | 45.749 | .1118E+06 | .958 | 149.0 | 121.5 | 148.9958 | 121.5512 | .2971E-02 | .6027E-03 |
| 20.071 | 52.075 | .1281E+06 | 1.05 | 149.0 | 122.0 | 148.9364 | 121.7117 | .7135E-03 | .1037E-02 |
| 20.046 | 58.375 | .1193E+06 | 1.066 | 149.0 | 122.0 | 148.8788 | 121.9453 | .4799E-03 | .9812E-03 |
| 20.038 | 64.599 | .1104E+06 | 1.050 | 149.0 | 122.0 | 148.8429 | 122.1277 | .9043E-03 | .4373E-03 |
| 20.041 | 70.859 | .6588E+05 | .916 | 149.0 | 122.5 | 148.8641 | 122.3591 | .9831E-03 | .1423E-02 |
| 20.018 | 1.801 | .7365E+05 | .904 | 149.0 | 122.5 | 148.8956 | 122.6375 | .9607E-03 | .1013E-02 |
| 20.024 | 8.159 | .1014E+06 | 1.033 | 149.0 | 123.0 | 148.9550 | 122.8025 | .9020E-03 | .4675E-03 |
| 20.018 | 14.362 | .1143E+06 | 1.062 | 149.0 | 123.0 | 149.0028 | 122.9890 | .7223E-03 | .1107E-02 |
| 19.984 | 20.721 | .1198E+06 | 1.056 | 149.0 | 123.0 | 149.0812 | 123.1948 | .8240E-03 | .1314E-02 |
| 19.968 | 26.962 | .1255E+06 | .778 | 149.0 | 123.5 | 149.2109 | 123.3791 | .8410E-03 | .1006E-02 |
| 19.987 | 33.247 | .1227E+06 | .966 | 149.5 | 123.5 | 149.3236 | 123.5921 | .6973E-03 | .1546E-02 |
| 20.069 | 39.510 | .1319E+06 | 1.041 | 149.5 | 124.0 | 149.4748 | 123.6998 | .1007E-02 | .7459E-03 |
| 20.102 | 45.775 | .1338E+06 | 1.029 | 149.5 | 124.0 | 149.6470 | 123.8624 | .3788E-03 | .6144E-03 |
| 20.094 | 52.071 | .1442E+06 | 1.043 | 150.0 | 124.0 | 149.8118 | 123.9772 | .7243E-03 | .4692E-03 |
| 20.052 | 58.278 | .1352E+06 | 1.067 | 150.0 | 124.0 | 150.0035 | 124.0986 | .5046E-03 | .1217E-02 |
| 20.099 | 64.575 | .1335E+06 | 1.054 | 150.0 | 124.0 | 150.2171 | 124.2255 | .5158E-03 | .1927E-02 |
| 20.052 | 70.848 | .8949E+05 | 1.048 | 150.5 | 124.5 | 150.4207 | 124.2535 | .3036E-03 | .1254E-02 |
| 20.055 | 1.791 | .9011E+05 | 1.005 | 150.5 | 124.5 | 150.6416 | 124.3245 | .9244E-03 | .8216E-03 |

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| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | .01149 | .00108 | -.00373 | -.00775 | .00022 | -.03739 |
| 1 | .00761 | .01585 | .01476 | .02534 | .00892 | -.04555 |
| 2 | -.02089 | .00708 | .00668 | -.00269 | -.00512 | .01113 |
| 3 | .01803 | -.00103 | .00714 | .00895 | -.00686 | .00572 |
| 4 | -.02355 | -.02492 | -.02264 | .00196 | .01733 | .00736 |
| 5 | .02651 | .04946 | .02944 | -.01231 | -.00209 | -.03447 |
| 6 | -.05274 | -.03287 | .01935 | -.02536 | .01508 | .00904 |
| 7 | -.00952 | .00015 | .01012 | .02783 | .00653 | .00877 |
| 8 | -.01153 | .00113 | .01245 | -.00842 | .02635 | -.01436 |
| 9 | -.01035 | -.01562 | -.00822 | .02089 | -.01500 | .00538 |

x0= 150.9627 y0= 122.2451 r0= 2.09521508 std.dev.= .01922628

HISTOGRAM DEVIATION >= e

| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|----|-----|-----|-----|-----|-----|------|------------|
| | 1 | 2 | 3 | 11 | 16 | 27 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta r1 | 3 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|---------|
| 0 | .01212 | .00172 | | -.00306 | -.00710 | .00087 | -.00574 |
| 1 | .00825 | .01648 | | | .02594 | .00951 | .04498 |
| 2 | -.02034 | .00761 | | .00719 | -.00220 | -.00466 | .01157 |
| 3 | .01845 | -.00064 | | .00751 | .00926 | -.00654 | .00601 |
| 4 | -.02327 | -.02466 | | -.02240 | .00219 | .01754 | .00756 |
| 5 | .02670 | .04964 | | .02962 | -.01213 | -.00191 | -.03427 |
| 6 | -.05255 | -.03267 | | .01955 | -.02514 | .01531 | |
| 7 | -.00924 | .00044 | | .01044 | .02816 | .00689 | .00916 |
| 8 | -.01112 | .00156 | | .01291 | -.00793 | .02685 | -.01383 |
| 9 | -.00980 | -.01505 | | -.00763 | .02149 | -.01438 | .00950 |

x0= 150.9626 y0= 122.2442 r0= 2.09480302 std.dev.= .01941648

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 2 | 3 | 11 | 14 | 27 | 2 |

ORIGINAL PAGE IS
OF POOR QUALITY

Disk 27-A Track data file TIMTAD04

| | Coarse | Fine | Track |
|--------------------|-----------|-----------|-----------|
| NRPM: | 1.0 | 1.0 | 64.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E+02 |
| Thresholds: | .1833E+06 | .2190E+05 | .7352E+06 |
| Constants: | .29800 | .25500 | .36700 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 20.038 | 8.173 | .4834E+05 | 2.804 | 151.0 | 124.5 | 150.8698 | 124.3618 | .6543E-03 | .8802E-03 |
| 20.055 | 14.373 | .4837E+05 | 2.800 | 151.0 | 124.5 | 151.0855 | 124.3483 | .1021E-02 | .4019E-03 |
| 20.049 | 20.729 | .4720E+05 | 2.832 | 151.5 | 124.5 | 151.3158 | 124.3195 | .7215E-03 | .5592E-03 |
| 20.043 | 26.972 | .4718E+05 | 2.858 | 151.5 | 124.5 | 151.5075 | 124.2729 | .7720E-03 | .1134E-02 |
| 20.108 | 33.264 | .5436E+05 | 2.836 | 151.5 | 124.0 | 151.6853 | 124.2147 | .5454E-03 | .1494E-02 |
| 20.046 | 39.533 | .5998E+05 | 2.829 | 152.0 | 124.0 | 151.8852 | 124.0843 | .8503E-03 | .1630E-02 |
| 20.034 | 45.737 | .6075E+05 | 2.910 | 152.0 | 124.0 | 152.1175 | 123.9937 | .4885E-03 | .1158E-02 |
| 20.069 | 52.067 | .5722E+05 | 2.865 | 152.5 | 124.0 | 152.3049 | 123.8852 | .9794E-03 | .1539E-02 |
| 20.015 | 58.364 | .5517E+05 | 2.891 | 152.5 | 123.5 | 152.4451 | 123.7554 | .1912E-02 | .3615E-01 |
| 19.990 | 64.607 | .5552E+05 | 2.782 | 152.5 | 123.5 | 152.5958 | 123.6110 | .7374E-03 | .1084E-02 |
| | | | | | | | | | |
| 19.956 | 70.748 | .5567E+05 | 2.770 | 152.5 | 123.5 | 152.7086 | 123.4253 | .6237E-03 | .4689E-03 |
| 19.934 | 1.766 | .5419E+05 | 2.822 | 153.0 | 123.0 | 152.7932 | 123.1673 | .4768E-03 | .1232E-02 |
| 19.979 | 8.145 | .5171E+05 | 2.801 | 153.0 | 123.0 | 152.9069 | 122.9552 | .1046E-02 | .7914E-03 |
| 19.954 | 14.373 | .4770E+05 | 2.805 | 153.0 | 123.0 | 152.9990 | 122.7627 | .5644E-03 | .1852E-02 |
| 19.968 | 20.710 | .4242E+05 | 2.701 | 153.0 | 122.5 | 153.0349 | 122.5869 | .8597E-03 | .1010E-02 |
| 19.942 | 26.946 | .4197E+05 | 2.730 | 153.0 | 122.5 | 153.0511 | 122.3340 | .4352E-03 | .3945E-03 |
| 19.973 | 33.236 | .5173E+05 | 2.843 | 153.0 | 122.0 | 153.0401 | 122.1283 | .7638E-03 | .3179E-03 |
| 20.024 | 39.531 | .5125E+05 | 2.869 | 153.0 | 122.0 | 153.0401 | 121.9494 | .9129E-03 | .1141E-02 |
| 19.979 | 45.790 | .5379E+05 | 2.857 | 153.0 | 122.0 | 152.9989 | 121.6976 | .3824E-03 | .1069E-02 |
| 19.984 | 52.071 | .5032E+05 | 2.766 | 153.0 | 121.5 | 152.9251 | 121.5355 | .6434E-03 | .5500E-03 |
| | | | | | | | | | |
| 20.060 | 58.364 | .4737E+05 | 2.865 | 153.0 | 121.0 | 152.8290 | 121.2884 | .6337E-03 | .1138E-02 |
| 19.956 | 64.526 | .4493E+05 | 2.856 | 152.5 | 121.0 | 152.6961 | 121.0666 | .9539E-03 | .9243E-03 |
| 20.024 | 70.859 | .4526E+05 | 2.866 | 152.5 | 121.0 | 152.5764 | 120.9304 | .9735E-03 | .1154E-02 |
| 20.032 | 1.776 | .4431E+05 | 2.852 | 152.5 | 121.0 | 152.4219 | 120.7449 | .6049E-02 | .1266E-02 |
| 19.959 | 8.166 | .4838E+05 | 2.756 | 152.5 | 120.5 | 152.2723 | 120.6247 | .4669E-03 | .1053E-02 |
| 20.007 | 14.350 | .4908E+05 | 2.714 | 152.0 | 120.5 | 152.1082 | 120.5105 | .2073E-03 | .1172E-02 |
| 20.024 | 20.714 | .4920E+05 | 2.763 | 152.0 | 120.5 | 151.9264 | 120.4035 | .9600E-03 | .1505E-02 |
| 20.088 | 26.958 | .6192E+05 | 2.916 | 151.5 | 120.0 | 151.6889 | 120.3109 | .1275E-02 | .7544E-01 |
| 20.077 | 33.250 | .5435E+05 | 2.864 | 151.5 | 120.0 | 151.4918 | 120.1986 | .1114E-02 | .9649E-01 |
| 20.085 | 39.514 | .5494E+05 | 2.845 | 151.5 | 120.0 | 151.2896 | 120.1627 | .1033E-02 | .1560E-02 |
| | | | | | | | | | |

ORIGINAL PAGE IS
OF POOR QUALITY

TN01-04

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 20.029 | 3.165 | .4525E+05 | 2.720 | 150.0 | 120.5 | 149.8150 | 120.5470 | .7525E-03 | .7153E-03 |
| 20.032 | 14.361 | .4546E+05 | 2.798 | 149.5 | 120.5 | 149.6154 | 120.6567 | .7831E-03 | .7062E-03 |
| 19.979 | 20.713 | .4230E+05 | 2.894 | 149.5 | 121.0 | 149.4705 | 120.7573 | .1011E-02 | .1277E-02 |
| 19.993 | 26.981 | .4156E+05 | 2.863 | 149.5 | 121.0 | 149.3488 | 120.9606 | .6844E-03 | .7531E-03 |
| 20.041 | 33.254 | .4184E+05 | 2.810 | 149.0 | 121.0 | 149.1836 | 121.0933 | .6437E-03 | .6443E-03 |
| 20.069 | 39.524 | .4790E+05 | 2.827 | 149.0 | 121.5 | 149.0949 | 121.2779 | .1706E-01 | .1701E-01 |
| 20.007 | 45.806 | .4894E+05 | 2.758 | 149.0 | 121.5 | 148.9544 | 121.5509 | .5903E-01 | .7313E-03 |
| 19.996 | 52.070 | .5573E+05 | 2.968 | 149.0 | 122.0 | 148.9370 | 121.7027 | .8007E-02 | .1302E-01 |
| 19.990 | 58.354 | .5195E+05 | 2.858 | 149.0 | 122.0 | 148.8817 | 121.9434 | .1139E-01 | .1016E-02 |
| 20.032 | 64.618 | .5142E+05 | 2.841 | 149.0 | 122.0 | 148.8444 | 122.1214 | .8904E-03 | .9504E-03 |
| 19.945 | 70.845 | .3960E+05 | 2.713 | 149.0 | 122.5 | 148.8703 | 122.3594 | .7325E-03 | .6042E-03 |
| 19.931 | 1.787 | .4090E+05 | 2.699 | 149.0 | 122.5 | 148.9034 | 122.6284 | .8825E-03 | .9531E-03 |
| 19.970 | 8.159 | .4668E+05 | 2.818 | 149.0 | 123.0 | 148.9589 | 122.8077 | .8540E-03 | .8758E-03 |
| 19.934 | 14.364 | .4920E+05 | 2.839 | 149.0 | 123.0 | 149.0013 | 122.9837 | .1044E-02 | .5897E-03 |
| 19.937 | 20.708 | .5012E+05 | 2.837 | 149.0 | 123.0 | 149.0773 | 123.1840 | .9094E-03 | .1114E-02 |
| 19.948 | 26.940 | .5130E+05 | 2.776 | 149.0 | 123.5 | 149.2105 | 123.3799 | .7458E-03 | .8897E-03 |
| 19.976 | 33.238 | .5113E+05 | 2.777 | 149.5 | 123.5 | 149.3313 | 123.5844 | .3806E-03 | .1030E-02 |
| 20.032 | 39.529 | .5446E+05 | 2.851 | 149.5 | 124.0 | 149.4806 | 123.7112 | .7129E-02 | .3674E-01 |
| 20.057 | 45.767 | .5365E+05 | 2.822 | 149.5 | 124.0 | 149.6470 | 123.8666 | .7712E-03 | .1278E-02 |
| 20.052 | 52.065 | .5626E+05 | 2.831 | 150.0 | 124.0 | 149.8123 | 123.9725 | .7392E-03 | .9715E-03 |
| 20.099 | 58.364 | .5417E+05 | 2.848 | 150.0 | 124.0 | 150.0044 | 124.0900 | .9387E-03 | .1143E-02 |
| 20.097 | 64.593 | .5398E+05 | 2.842 | 150.0 | 124.0 | 150.2121 | 124.2117 | .5221E-03 | .9853E-03 |
| 20.043 | 70.841 | .4463E+05 | 2.852 | 150.5 | 124.5 | 150.4206 | 124.2557 | .2652E-03 | .9592E-03 |
| 20.041 | 1.787 | .4476E+05 | 2.808 | 150.5 | 124.5 | 150.6365 | 124.3273 | .5949E-03 | .5809E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta r1 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .02290 | .01102 | .00862 | .00420 | .00244 | .001778 |
| 1 | .00027 | .02417 | .02119 | .02639 | .01270 | .04474 |
| 2 | -.02477 | .00657 | .00584 | -.00404 | -.01352 | .00412 |
| 3 | .01437 | -.00738 | .00321 | .00706 | .01252 | .00174 |
| 4 | -.01065 | -.01537 | -.01553 | -.02816 | .01756 | .01352 |
| 5 | .03078 | .05137 | .03619 | -.00562 | -.00022 | .03837 |
| 6 | -.04543 | -.01234 | .01191 | -.03270 | .02391 | .00779 |
| 7 | -.00660 | .00126 | .00684 | .02593 | -.00050 | .00146 |
| 8 | -.01488 | -.00036 | .01002 | -.00862 | .01451 | -.01152 |
| 9 | -.00808 | -.02076 | -.01720 | .00893 | -.01359 | .01164 |

x0= 150.9618 y0= 122.2458 r0= 2.09514022 std.dev.= .01916549

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 2 | 5 | 9 | 19 | 24 | 0 |

ORIGINAL PAGE IS
OF POOR
QUALITY

| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | .02376 | .01191 | .00951 | .00509 | .00335 | .02227 |
| 1 | .00109 | .02494 | | .02707 | .01312 | .04445 |
| 2 | -.02438 | .00686 | .00605 | .00236 | .01353 | .00401 |
| 3 | .01413 | -.00771 | .00274 | .00147 | -.01325 | .00392 |
| 4 | -.01151 | -.01630 | -.01654 | | .01341 | .01234 |
| 5 | .02956 | .05012 | .03424 | -.00688 | .00212 | -.03397 |
| 6 | -.04660 | -.01346 | .01083 | -.03370 | .02297 | |
| 7 | -.00933 | | .00629 | .02547 | -.00084 | -.00166 |
| 8 | -.01498 | -.00036 | .01012 | -.00841 | .01484 | |
| 9 | -.00758 | -.02018 | -.01654 | .00966 | -.01281 | .01247 |

y0= 150.9616 y0= 122.2447 r0= 2.09531713 std.dev.= .01934211

HISTOGRAM DEVIATION >= e

| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|----|-----|-----|-----|-----|-----|------|------------|
| | 1 | 2 | 4 | 8 | 18 | 22 | 5 |

ORIGINAL PAGE IS
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NDR0:
Integration delay: .1160E+00
Thresholds: .1838E+06

Coarse 1.0
Fine 1.0
Track 192.0
.4564E+00
.9190E+05
.7974E+00
.7352E+06

Constants: .29800
Displacements: 0.00000

| temp | angle | dark | star | reference | | position | | standard deviation | |
|--------|--------|-----------|-------|-----------|-------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| 20.041 | 8.157 | .6049E+05 | 6.051 | 151.0 | 124.5 | 150.8403 | 124.3737 | .2194E-02 | .3460E-02 |
| 20.049 | 14.373 | .6037E+05 | 6.044 | 151.0 | 124.5 | 151.0483 | 124.3700 | .3007E-02 | .3780E-02 |
| 20.102 | 20.716 | .6008E+05 | 6.084 | 151.5 | 124.5 | 151.3392 | 124.3560 | .4312E-02 | .5250E-02 |
| 20.032 | 26.970 | .6005E+05 | 6.112 | 151.5 | 124.5 | 151.5239 | 124.3088 | .4243E-02 | .5852E-02 |
| 20.097 | 33.256 | .6016E+05 | 6.101 | 151.5 | 124.0 | 151.6624 | 124.1606 | .4341E-02 | .6427E-02 |
| 20.077 | 39.530 | .6124E+05 | 6.159 | 152.0 | 124.0 | 151.8578 | 123.9844 | .5198E-02 | .5445E-02 |
| 20.116 | 45.801 | .6137E+05 | 6.150 | 152.0 | 124.0 | 152.1145 | 123.8908 | .2641E-02 | .6711E-02 |
| 20.088 | 52.063 | .6056E+05 | 6.163 | 152.5 | 124.0 | 152.3557 | 123.7531 | .4105E-02 | .1337E-01 |
| 19.979 | 58.370 | .6174E+05 | 6.305 | 152.5 | 123.5 | 152.4734 | 123.7345 | .2220E-01 | .1066E+00 |
| 20.015 | 64.604 | .6199E+05 | 6.219 | 152.5 | 123.5 | 152.5995 | 123.5946 | .7979E-02 | .2775E-02 |
| 20.057 | 70.859 | .6195E+05 | 6.198 | 152.5 | 123.5 | 152.7334 | 123.3775 | .5031E-02 | .6329E-02 |
| 19.979 | 1.788 | .6020E+05 | 6.271 | 153.0 | 123.0 | 152.8145 | 123.3135 | .4435E-02 | .3078E-02 |
| 19.968 | 8.164 | .6002E+05 | 6.243 | 153.0 | 123.0 | 152.9496 | 123.0620 | .5305E-02 | .7045E-02 |
| 19.934 | 14.372 | .5975E+05 | 6.249 | 153.0 | 123.0 | 153.0371 | 122.8277 | .6826E-02 | .5890E-02 |
| 19.962 | 20.724 | .5974E+05 | 6.241 | 153.0 | 122.5 | 153.0580 | 122.6175 | .2112E-01 | .2291E-01 |
| 19.973 | 26.980 | .5960E+05 | 6.270 | 153.0 | 122.5 | 153.1242 | 122.2661 | .4373E-02 | .7003E-02 |
| 20.001 | 33.256 | .5809E+05 | 6.096 | 153.0 | 122.0 | 152.9519 | 121.9732 | .1121E-01 | .1645E-01 |
| 19.998 | 39.522 | .5786E+05 | 6.108 | 153.0 | 122.0 | 152.9328 | 121.7999 | .4905E-02 | .4490E-02 |
| 19.976 | 45.804 | .5874E+05 | 6.153 | 153.0 | 121.5 | 152.9541 | 121.7532 | .5265E-02 | .4344E-02 |
| 19.998 | 52.089 | .5883E+05 | 6.094 | 153.0 | 121.5 | 152.8967 | 121.4907 | .6075E-02 | .4981E-02 |
| 20.046 | 58.370 | .5873E+05 | 6.218 | 153.0 | 121.0 | 152.8043 | 121.3180 | .3750E-02 | .4341E-02 |
| 20.046 | 64.604 | .6016E+05 | 6.168 | 152.5 | 121.0 | 152.7158 | 121.0888 | .3824E-02 | .9421E-02 |
| 20.018 | 70.766 | .6016E+05 | 6.186 | 152.5 | 121.0 | 152.6098 | 120.9302 | .3413E-02 | .5789E-02 |
| 19.993 | 1.784 | .6004E+05 | 6.155 | 152.5 | 121.0 | 152.4404 | 120.7529 | .1391E-02 | .5053E-02 |
| 19.965 | 8.172 | .5979E+05 | 6.010 | 152.5 | 120.5 | 152.2901 | 120.6679 | .4443E-02 | .9388E-02 |
| 20.035 | 14.376 | .5989E+05 | 5.934 | 152.0 | 120.5 | 152.1064 | 120.5618 | .3223E-02 | .2253E-02 |
| 20.063 | 20.729 | .5995E+05 | 5.989 | 152.0 | 120.5 | 151.9335 | 120.4691 | .3304E-02 | .3031E-02 |
| 20.063 | 26.952 | .6057E+05 | 6.191 | 151.5 | 120.0 | 151.6364 | 120.3376 | .3100E-01 | .1404E+00 |
| 20.060 | 33.238 | .6006E+05 | 6.137 | 151.5 | 120.0 | 151.4303 | 120.1783 | .7775E-02 | .6624E-02 |
| 20.130 | 39.529 | .6018E+05 | 6.130 | 151.5 | 120.0 | 151.2179 | 120.1509 | .3703E-02 | .4047E-02 |
| 20.071 | 45.793 | .6103E+05 | 6.111 | 151.0 | 120.0 | 151.0879 | 120.1853 | .5244E-02 | .9463E-02 |
| 20.052 | 52.067 | .6099E+05 | 6.113 | 151.0 | 120.0 | 150.8501 | 120.1652 | .3938E-02 | .4190E-02 |
| 20.105 | 58.358 | .5881E+05 | 6.204 | 150.5 | 120.0 | 150.5887 | 120.1989 | .4134E-02 | .8723E-02 |
| 20.094 | 64.596 | .5886E+05 | 6.211 | 150.5 | 120.0 | 150.3580 | 120.2932 | .3014E-02 | .9671E-02 |
| 20.043 | 70.837 | .5873E+05 | 6.154 | 150.0 | 120.5 | 150.2632 | 120.3623 | .6987E-01 | .6511E-01 |

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| | | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|-----|
| 20.015 | 1.7 | .5 | 105 | 5.04 | 15 | 1 | 150 | 2411 | F-02 | 819 |
| 20.012 | 8.169 | .5844E+05 | 6.015 | 150.0 | 120.5 | 149.8493 | 120.5358 | .4196E-02 | .5671E-02 | |
| 19.987 | 14.359 | .5921E+05 | 6.205 | 149.5 | 120.5 | 149.6734 | 120.7478 | .5513E-02 | .7314E-02 | |
| 20.052 | 20.690 | .5883E+05 | 6.282 | 149.5 | 121.0 | 149.5530 | 120.6807 | .5269E-02 | .1290E-01 | |
| 19.979 | 26.937 | .5881E+05 | 6.252 | 149.5 | 121.0 | 149.3942 | 120.9173 | .4797E-02 | .6316E-02 | |
| 20.024 | 33.262 | .5794E+05 | 6.120 | 149.0 | 121.0 | 149.1593 | 121.0546 | .3561E-02 | .4111E-02 | |
| 19.993 | 39.499 | .5832E+05 | 6.197 | 149.0 | 121.5 | 149.0625 | 121.2623 | .2560E-01 | .4318E-01 | |
| 20.015 | 45.790 | .5830E+05 | 6.111 | 149.0 | 121.5 | 148.9530 | 121.5807 | .2570E-02 | .4319E-02 | |
| 20.038 | 52.071 | .5849E+05 | 6.208 | 149.0 | 121.5 | 148.8645 | 121.8905 | .4301E-02 | .9339E-02 | |
| 19.993 | 58.364 | .5873E+05 | 6.229 | 149.0 | 122.0 | 148.8311 | 121.8256 | .1297E-01 | .1700E-01 | |
| 20.049 | 64.586 | .5879E+05 | 6.200 | 149.0 | 122.0 | 148.7922 | 122.0359 | .6295E-02 | .8657E-02 | |
| 19.945 | 70.866 | .5732E+05 | 6.019 | 149.0 | 122.5 | 148.9019 | 122.3445 | .3841E-02 | .3535E-02 | |
| 20.007 | 1.787 | .5730E+05 | 6.004 | 149.0 | 122.5 | 148.9400 | 122.6114 | .2148E-02 | .3579E-03 | |
| 19.937 | 8.161 | .5732E+05 | 6.047 | 149.0 | 123.0 | 148.9856 | 122.9253 | .3011E-02 | .2916E-02 | |
| 19.934 | 14.364 | .5742E+05 | 6.061 | 149.0 | 123.0 | 149.0265 | 123.0784 | .3238E-02 | .4075E-02 | |
| 19.956 | 20.718 | .5740E+05 | 6.055 | 149.0 | 123.0 | 149.0976 | 123.2642 | .2810E-02 | .3840E-02 | |
| 19.973 | 26.950 | .5759E+05 | 6.009 | 149.0 | 123.5 | 149.2315 | 123.3654 | .8797E-02 | .5884E-02 | |
| 19.982 | 33.233 | .5864E+05 | 6.066 | 149.5 | 123.5 | 149.2952 | 123.5478 | .3714E-02 | .2901E-02 | |
| 19.937 | 39.528 | .5860E+05 | 6.117 | 149.5 | 123.5 | 149.4248 | 123.7460 | .5033E-02 | .3154E-02 | |
| 20.057 | 45.801 | .5703E+05 | 5.896 | 149.5 | 124.0 | 149.5999 | 123.8838 | .3077E-02 | .5550E-02 | |
| 20.111 | 52.093 | .5714E+05 | 5.918 | 150.0 | 124.0 | 149.8364 | 123.9479 | .4515E-02 | .7925E-02 | |
| 20.128 | 58.358 | .5701E+05 | 5.926 | 150.0 | 124.0 | 149.9685 | 124.0297 | .2412E-02 | .6092E-02 | |
| 20.057 | 64.616 | .5699E+05 | 5.927 | 150.0 | 124.0 | 150.1724 | 124.1302 | .4081E-02 | .2387E-02 | |
| 20.046 | 70.866 | .5783E+05 | 6.060 | 150.5 | 124.5 | 150.3731 | 124.3153 | .3572E-02 | .4508E-02 | |
| 19.990 | 1.784 | .5783E+05 | 6.029 | 150.5 | 124.5 | 150.5765 | 124.3666 | .1815E-02 | .6222E-02 | |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .02460 | .01999 | .03907 | .03457 | -.06356 | .14496 |
| 1 | -.08996 | -.04332 | .02609 | .02776 | .01064 | .04756 |
| 2 | .06063 | .06935 | .04468 | .08121 | -.07293 | -.05663 |
| 3 | -.02484 | .00171 | -.01128 | .02835 | .03668 | .02998 |
| 4 | -.00817 | -.03419 | -.04507 | -.04615 | .04897 | .03960 |
| 5 | -.00694 | .01140 | .00719 | -.03124 | -.06664 | -.02207 |
| 6 | -.03872 | -.10516 | .02438 | -.02898 | .07457 | .05085 |
| 7 | .02501 | .03337 | .07835 | .08459 | -.03539 | -.04520 |
| 8 | -.01229 | .00369 | .02007 | -.04414 | .00904 | .04103 |
| 9 | .02281 | -.06731 | -.07586 | -.06499 | .04383 | .04602 |

x0= 150.9539 y0= 122.2631 r0= 2.08903408 std.dev.= .05024052

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 17 | 11 | 9 | 12 | 5 | 6 | 0 |

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OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .02604 | .02077 | .03891 | .03380 | -.06491 | -.14704 |
| 1 | -.09301 | | | .02317 | .00547 | .04218 |
| 2 | .05471 | -.06306 | | .07438 | | -.06356 |
| 3 | -.03176 | -.00509 | -.01791 | .02198 | .03059 | .02431 |
| 4 | -.01350 | -.03905 | -.04944 | | .04621 | .03748 |
| 5 | -.00867 | .01045 | .00708 | -.03054 | | -.02076 |
| 6 | -.03621 | -.10184 | | -.02478 | .07937 | |
| 7 | .03087 | .03965 | | .09102 | -.02875 | -.03350 |
| 8 | -.00567 | .01022 | .02642 | -.03796 | .01496 | .04756 |
| 9 | .02791 | -.06272 | -.07171 | -.06142 | .04669 | .05076 |

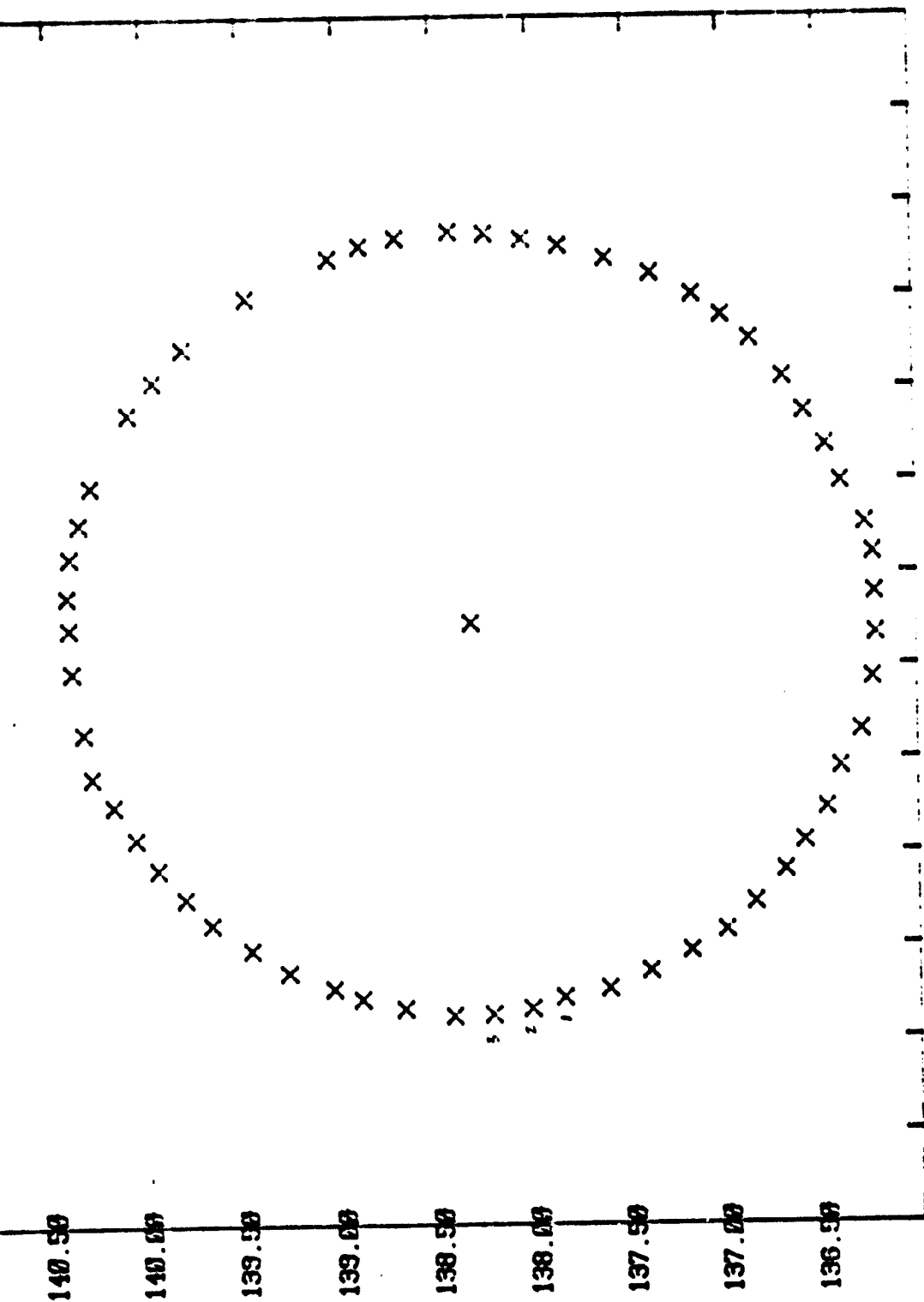
x0= 150.9606 y0= 122.2619 r0= 2.08915377 std.dev.= .04940632

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 14 | 5 | 12 | 10 | 5 | 5 | 9 |

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OF POOR QUALITY



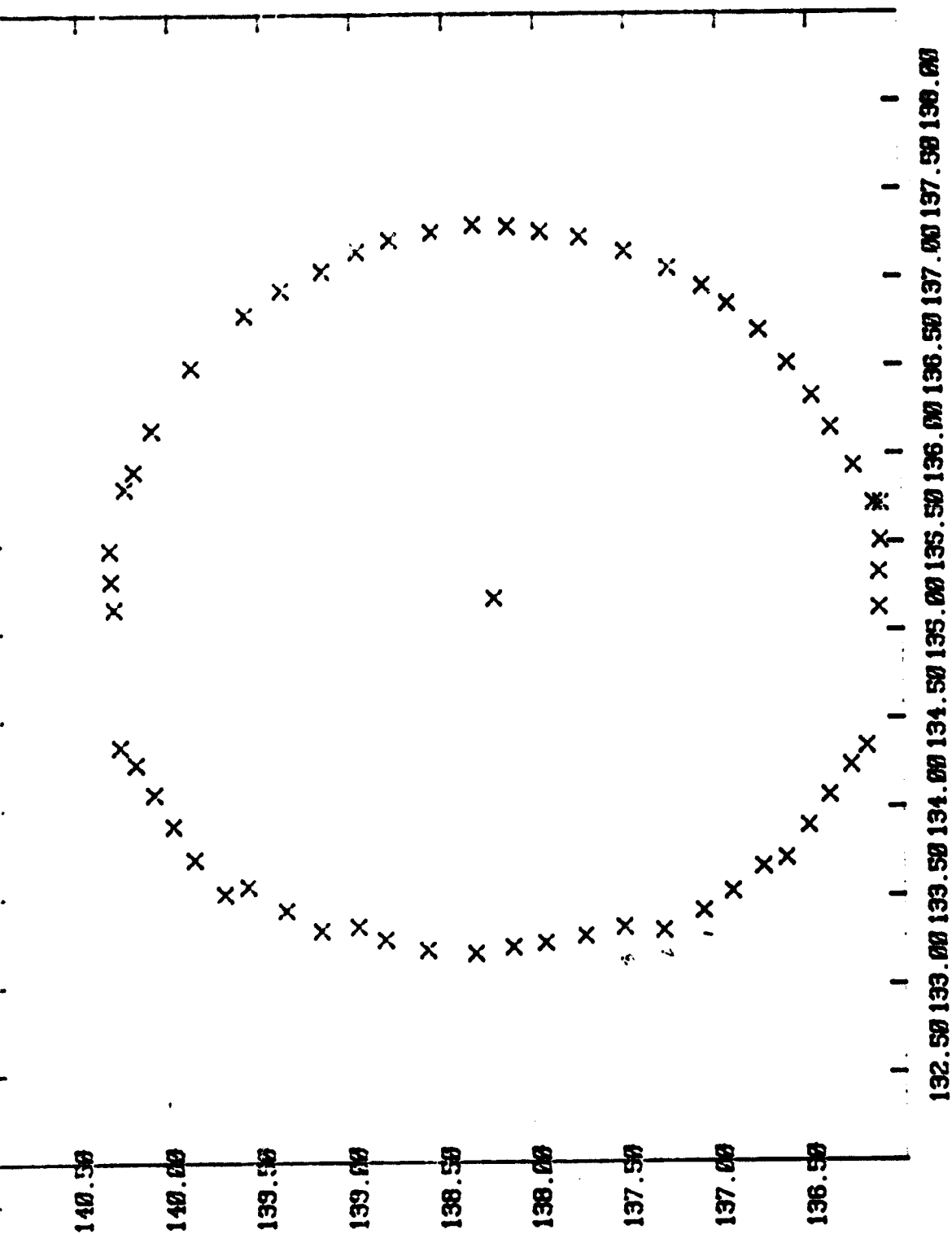
132.50 133.00 133.50 134.00 134.50 135.00 135.50 136.00 136.50 137.00 137.50 138.00 138.50 139.00

POSITION #3 S.D= 1.336%

27-A-07 F2.8 +.9M 2 K=.337 .287.378.28 10% W' C

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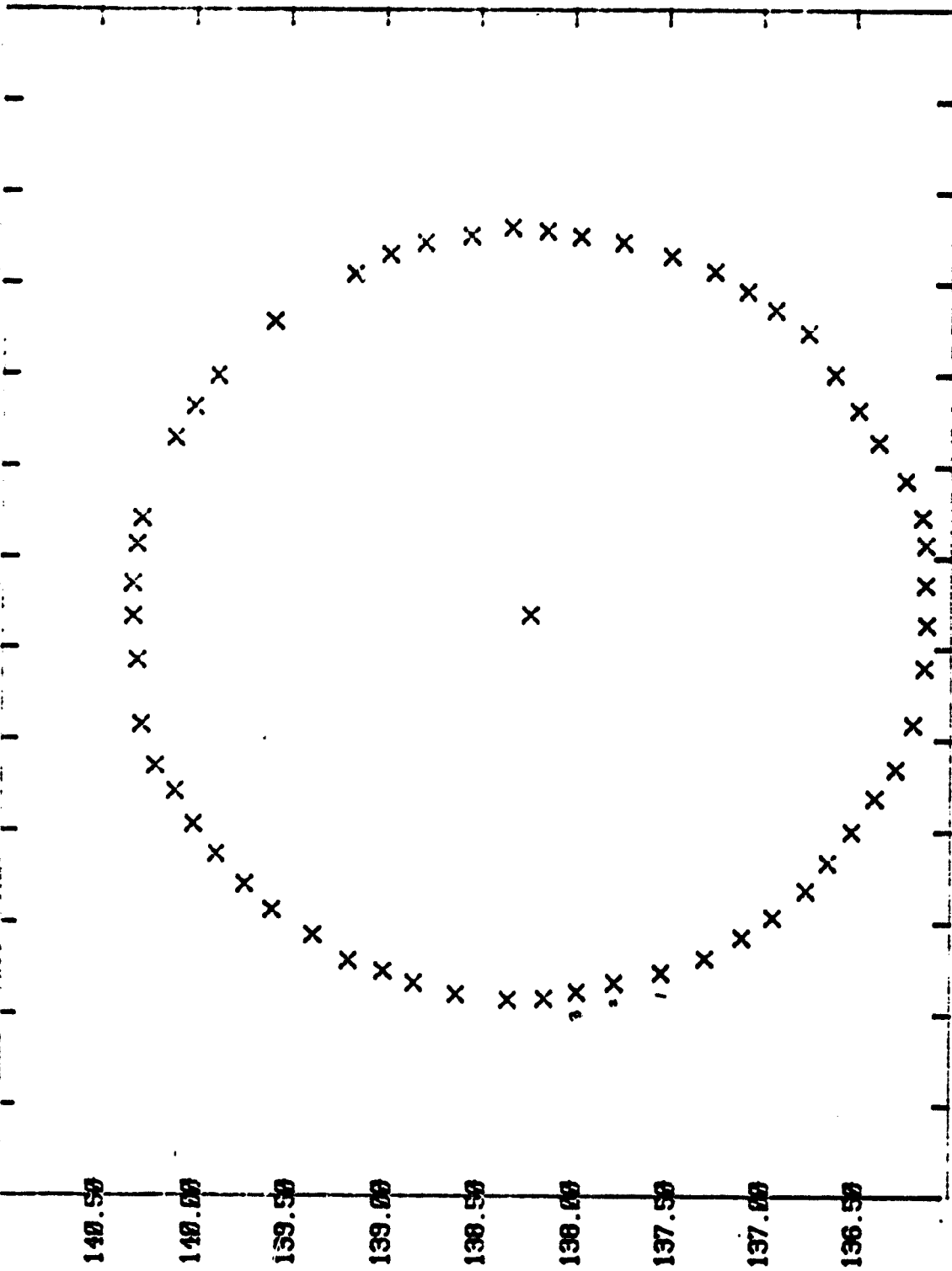
TR81-04



27-A-09 F2.8 +.9M 2 K=.337.287.378.28 <1% 0°C

ORIGINAL PAGE IS
OF POOR QUALITY

TR91-94

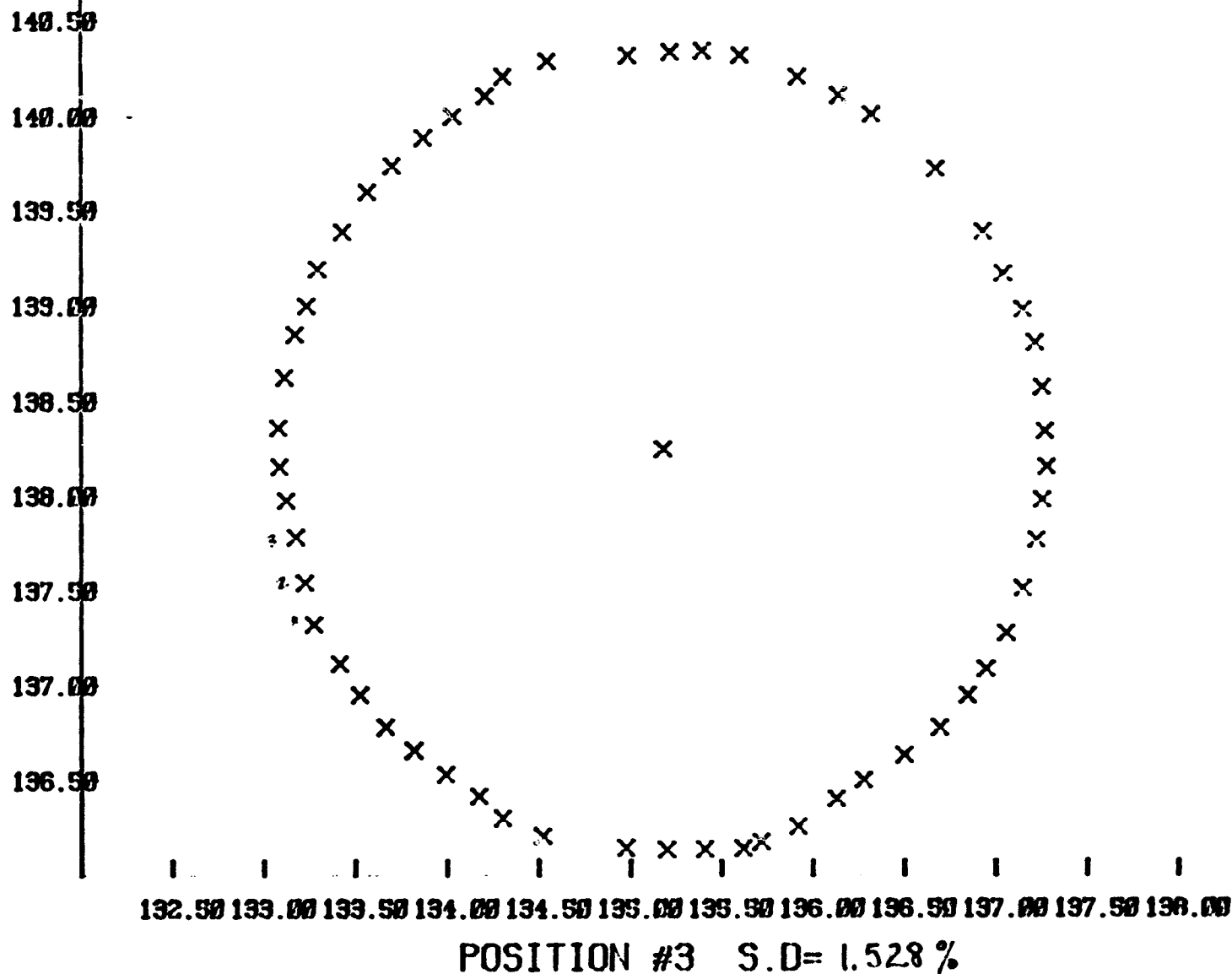


132.50 133.00 133.50 134.00 134.50 135.00 135.50 136.00 136.50 137.00 137.50 138.00

POSITION #3 S.D= 1.510%

27-A-11 F2.8 +.9M 2 K=.337.287.378.28 100% 10'C

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OF POOR QUALITY

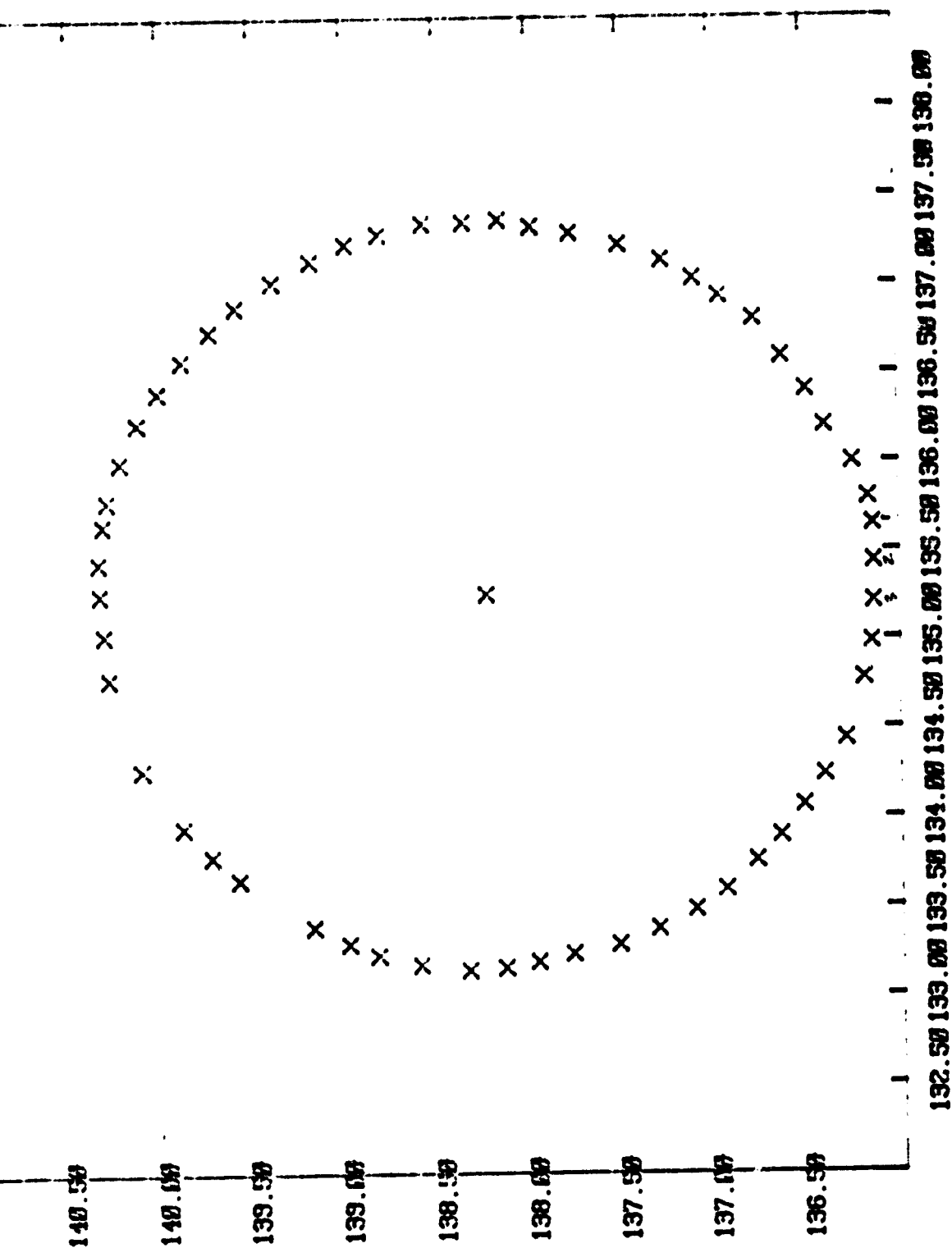


27-A-10 F2.8 +.9M 2 K=.337.287.378.28 10% 10° C

TM81-44

ORIGINAL PAGE IS
OF POOR QUALITY

TR81-64

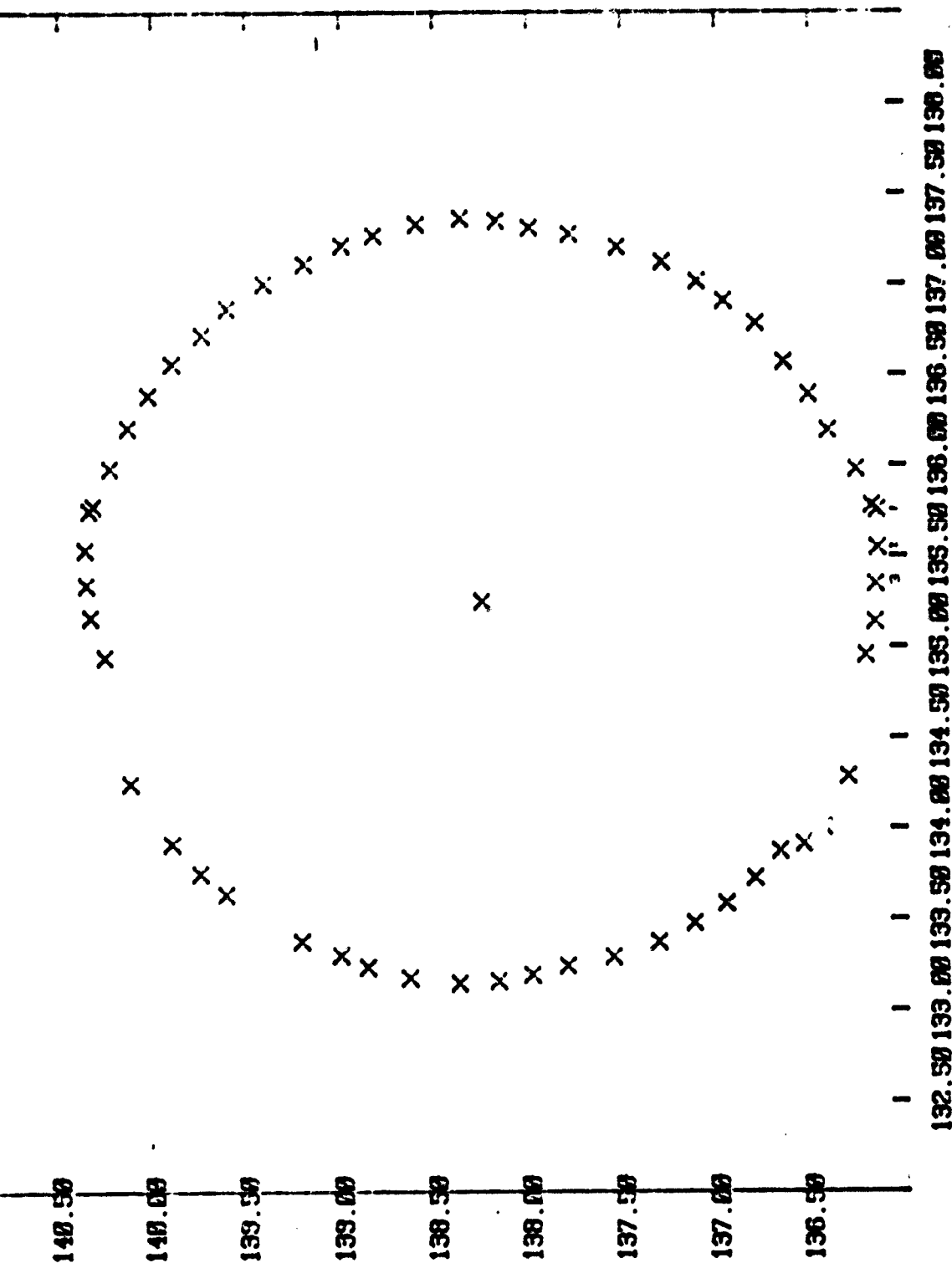


POSITION #3 S.D= 1.444 %

29-A-02 F2.8 +.9M 2 K=.337 .287 378.28 100% 20°C

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OF POOR QUALITY.

TR81-04



POSITION #3 S.D= 1.952 %

29-A-01 F2.8 +.9M 2 K=.337.287.378.28 10% 20°C

T7001-00

| time | anode | current | star | X | reference |
|------|--------|-----------|-------|-------|-----------|
| 1.78 | 52.081 | 818E+05 | 1.113 | 133.0 | 133.0 |
| 1.73 | 98.794 | 790E+05 | 1.127 | 134.0 | 134.0 |
| 1.71 | 68.653 | 810E+05 | 1.101 | 133.0 | 133.0 |
| 1.71 | 70.844 | 832E+05 | 1.175 | 133.0 | 133.0 |
| 1.66 | 32.703 | 463E+05 | 1.063 | 133.0 | 133.0 |
| 1.80 | 1.800 | 520E+05 | 1.113 | 133.0 | 133.0 |
| 1.70 | 8.174 | 700E+05 | 1.113 | 133.0 | 133.0 |
| 1.71 | 14.363 | 756E+05 | 1.130 | 133.0 | 133.0 |
| 1.66 | 20.716 | 692E+05 | 1.073 | 133.5 | 133.5 |
| 1.70 | 26.914 | 706E+05 | 1.066 | 133.5 | 133.5 |
| 1.64 | 33.270 | 933E+05 | 1.030 | 133.5 | 133.5 |
| 1.62 | 39.530 | 113E+06 | 1.071 | 134.0 | 134.0 |
| 1.64 | 45.834 | 102E+06 | 1.141 | 134.0 | 134.0 |
| 1.74 | 52.073 | 993E+05 | 1.151 | 134.0 | 134.0 |
| 1.62 | 58.401 | 100E+06 | 1.161 | 134.0 | 134.0 |
| 1.63 | 64.563 | 780E+05 | 1.073 | 134.5 | 134.5 |
| 1.64 | 70.910 | 592E+05 | 1.071 | 135.0 | 135.0 |
| 1.67 | 1.145 | 500E+05 | 1.113 | 135.0 | 135.0 |
| 1.67 | 33.134 | 500E+05 | 1.066 | 135.0 | 135.0 |
| 1.67 | 14.414 | 733E+05 | 1.063 | 135.5 | 135.5 |
| 1.62 | 20.719 | 759E+05 | 1.043 | 135.5 | 135.5 |
| 1.64 | 26.920 | 632E+05 | 1.081 | 136.0 | 136.0 |
| 1.71 | 33.270 | 743E+05 | 1.087 | 136.0 | 136.0 |
| 1.73 | 30.359 | 999E+05 | 1.105 | 136.0 | 136.0 |
| 1.67 | 45.826 | 903E+05 | 1.087 | 136.5 | 136.5 |
| 1.67 | 52.076 | 921E+05 | 1.083 | 136.5 | 136.5 |
| 1.67 | 58.400 | 120E+06 | 1.063 | 137.0 | 137.0 |
| 1.64 | 64.563 | 996E+05 | 1.051 | 137.0 | 137.0 |
| 1.73 | 70.917 | 912E+05 | 1.066 | 137.0 | 137.0 |
| 1.67 | 1.041 | 790E+05 | 1.067 | 137.0 | 137.0 |
| 1.61 | 33.134 | 130.0E+06 | 1.080 | 137.0 | 137.0 |
| 1.63 | 14.414 | 102E+06 | 1.081 | 137.0 | 137.0 |
| 1.63 | 30.359 | 111E+06 | 1.081 | 137.0 | 137.0 |
| 1.63 | 45.826 | 111E+06 | 1.081 | 137.0 | 137.0 |
| 1.63 | 52.076 | 111E+06 | 1.081 | 137.0 | 137.0 |

THE

ORIGINAL PAGE IS
OF POOR QUALITY

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

REVISIONS

| REV | DATE | DESCRIPTION |
|-----|----------|----------------|
| 1 | 01/01/00 | Initial Design |
| 2 | 02/01/00 | Revised Design |
| 3 | 03/01/00 | Final Design |

ORIGINAL PAGE IS
OF POOR QUALITY

2 3 4 5 6 7 8 9 10 11 12

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|------|------------|
| .00 | .06 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| . | . | . | . | . | . | . | . |
| 7 | 9 | 8 | 2 | 7 | 15 | 34 | ? |

Disk 27-A

Track data file ID01007

Position 03

| | Coarse | Fine | Track |
|-------------------|-----------|-----------|-----------|
| WDRS | 1.0 | 1.0 | 64.0 |
| Integration delay | .1140E+00 | .4564E+00 | .1341E+01 |
| Thresholds | .1839E+05 | .2120E+05 | .7357E+05 |

| | .000000 | .000000 | .000000 | .000000 |
|---------------|---------|---------|---------|---------|
| Constants | .000000 | .000000 | .000000 | .000000 |
| Displacements | .000000 | .000000 | .000000 | .000000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|-------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .057 | 52.071 | .1922E+05 | 2.893 | 133.0 | 138.0 | 133.2160 | 137.8565 | .1579E-02 | .1493E-01 |
| .032 | 58.373 | .1889E+05 | 2.893 | 133.0 | 138.0 | 133.1596 | 138.0267 | .1109E-02 | .5744E-01 |
| .055 | 64.613 | .1919E+05 | 2.839 | 133.0 | 138.0 | 133.1201 | 138.2268 | .0007E-03 | .1552E-01 |
| -.018 | 70.877 | .1000E+05 | 2.645 | 133.0 | 139.5 | 133.1215 | 138.4310 | .7038E-03 | .5481E-01 |
| -.049 | 1.902 | .1226E+05 | 2.783 | 133.0 | 139.0 | 133.1606 | 138.6832 | .1381E-02 | .4724E-01 |
| -.030 | 8.174 | .1568E+05 | 2.849 | 133.0 | 139.0 | 133.1124 | 138.9025 | .5777E-01 | .1093E-02 |
| -.055 | 14.399 | .1670E+05 | 2.893 | 133.0 | 139.0 | 133.2700 | 138.0400 | .2359E-01 | .1124E-01 |
| -.001 | 20.730 | .1937E+05 | 2.789 | 133.5 | 139.0 | 133.2537 | 139.2761 | .8134E-01 | .1231E-02 |
| -.034 | 26.962 | .2040E+05 | 2.650 | 133.5 | 139.5 | 133.4885 | 139.4603 | .0116E-01 | .5231E-01 |
| -.058 | 33.248 | .2000E+05 | 2.690 | 133.5 | 139.5 | 133.6105 | 139.6761 | .1557E-03 | .2131E-01 |
| | | | | | | | | | |
| .086 | 39.540 | .2576E+05 | 2.856 | 134.0 | 140.0 | 133.7591 | 139.8106 | .1079E-02 | .1634E-01 |
| .122 | 45.005 | .2329E+05 | 2.907 | 134.0 | 140.0 | 133.9165 | 139.9482 | .5750E-03 | .2001E-01 |
| .144 | 52.005 | .2251E+05 | 2.910 | 134.0 | 140.0 | 134.0802 | 140.0642 | .8547E-03 | .1174E-01 |
| .128 | 58.364 | .2291E+05 | 2.917 | 134.0 | 140.0 | 134.2596 | 140.1808 | .1178E-02 | .3847E-01 |
| .105 | 64.589 | .1655E+05 | 2.851 | 134.5 | 140.0 | 134.4131 | 140.2977 | .7537E-03 | .1113E-01 |
| .052 | 70.862 | .1177E+05 | 2.774 | 134.5 | 140.5 | 134.6519 | 140.3343 | .1089E-02 | .6491E-01 |
| .055 | 1.791 | .1170E+05 | 2.780 | 135.0 | 140.5 | 134.9008 | 140.3877 | .6188E-03 | .3056E-01 |
| .055 | 8.177 | .1171E+05 | 2.755 | 135.0 | 140.5 | 135.2115 | 140.4031 | .1303E-02 | .8757E-01 |
| .049 | 14.377 | .1076E+05 | 2.737 | 135.5 | 140.5 | 135.3873 | 140.4118 | .1004E-02 | .5154E-01 |
| .125 | 20.723 | .1066E+05 | 2.720 | 135.5 | 140.5 | 135.6004 | 140.3964 | .6715E-03 | .2254E-01 |
| | | | | | | | | | |
| .094 | 26.962 | .1474E+05 | 2.762 | 136.0 | 140.5 | 136.7271 | 140.2856 | .2003E-03 | .2244E-01 |
| .133 | 33.217 | .2329E+05 | 2.848 | 136.0 | 140.0 | 136.9803 | 140.2862 | .1113E-01 | .1713E-01 |
| .136 | 39.460 | .2223E+05 | 2.862 | 136.0 | 140.0 | 137.1296 | 140.1928 | .2314E-03 | .1357E-01 |
| .158 | 45.797 | .2060E+05 | 2.861 | 136.5 | 140.0 | 136.3290 | 140.0706 | .8711E-03 | .2380E-01 |
| .130 | 52.097 | .2198E+05 | 2.837 | 136.5 | 140.0 | 136.5423 | 139.9813 | .6025E-03 | .2450E-01 |
| .130 | 58.380 | .2682E+05 | 2.846 | 137.0 | 140.0 | 136.7046 | 139.7046 | .0007E-02 | .1300E-01 |
| -.018 | 64.607 | .2199E+05 | 2.798 | 137.0 | 139.5 | 136.8447 | 139.6305 | .2402E-03 | .2141E-01 |
| -.072 | 70.884 | .2133E+05 | 2.709 | 137.0 | 139.5 | 136.9598 | 139.4598 | .5434E-03 | .4711E-01 |
| -.041 | 1.819 | .1984E+05 | 2.823 | 137.0 | 139.0 | 137.1030 | 139.2520 | .1324E-02 | .1054E-01 |
| -.046 | 8.160 | .1907E+05 | 2.848 | 137.0 | 139.0 | 137.2021 | 139.0057 | .1148E-02 | .1154E-01 |
| | | | | | | | | | |
| -.052 | 14.354 | .1611E+05 | 2.832 | 137.0 | 139.0 | 137.3671 | 139.2205 | .2063E-03 | .3824E-01 |
| -.021 | 20.714 | .1349E+05 | 2.681 | 137.5 | 139.5 | 137.3894 | 139.2295 | .0104E-02 | .2724E-01 |
| .004 | 26.947 | .1007E+05 | 2.620 | 137.5 | 139.5 | 137.5117 | 139.4117 | .1279E-03 | .1113E-01 |
| .082 | 33.214 | .1244E+05 | 2.833 | 137.5 | 139.0 | 137.6340 | 139.2127 | .0011E-02 | .2711E-01 |
| .069 | 39.465 | .1680E+05 | 2.620 | 137.5 | 139.0 | 137.7563 | 139.0320 | .0009E-03 | .1054E-01 |

ORIGINAL FROM
OF THE
QUALITY

7-10-68

[illegible]

SECRET - 00

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |

100

[illegible]

**ORIGINAL PAGE IS
OF POOR QUALITY**

THESE

[illegible]

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|--------|--------|--------|--------|--------|--------|
| 0 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 1 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 2 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 3 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 4 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 5 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 6 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 7 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 8 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 9 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |

0- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

HISTOGRAM DEVIATION

| as | 18 | 3 | 3 | 3 | 5 | 15 | 16 | 0 |
|----|-----|-----|-----|-----|-----|------|------------|---|
| | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points | |

DISK 21-A track data file 1001011

NAME: L001
 Information data: L001
 This should be: L001

Constants: L001
 Displacements: L001

| time | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----|
| | | | | X | Y | X | Y | X | Y |
| 10.222 | 45.790 | .6416E+05 | .046 | 133.0 | 137.5 | 133.2241 | 137.5259 | .4264 | .01 |
| 10.202 | 52.084 | .8397E+05 | 1.104 | 133.0 | 138.0 | 133.1607 | 137.7733 | .1149 | .02 |
| 10.196 | 58.365 | .8042E+05 | 1.110 | 133.0 | 138.0 | 133.1201 | 137.9240 | .2040 | .02 |
| 10.213 | 64.623 | .8235E+05 | 1.117 | 133.0 | 138.0 | 133.0047 | 137.1450 | .0762 | .02 |
| 10.219 | 70.089 | .4232E+05 | .214 | 133.0 | 138.5 | 133.0773 | 137.5824 | .2001 | .02 |
| 10.151 | 1.727 | .5234E+05 | .207 | 133.0 | 138.5 | 133.1074 | 137.7107 | .1183 | .02 |
| 10.182 | 11.153 | .7029E+05 | 1.066 | 133.0 | 139.0 | 133.1201 | 137.0754 | .2024 | .02 |
| 10.194 | 14.364 | .7834E+05 | 1.124 | 133.0 | 139.0 | 133.1311 | 137.0757 | .2278 | .02 |
| 10.171 | 20.711 | .8545E+05 | 1.102 | 133.0 | 139.0 | 133.1109 | 137.1748 | .2000 | .02 |
| 10.174 | 26.262 | .1010E+06 | .396 | 133.5 | 139.5 | 133.1305 | 137.2577 | .1020 | .02 |
| | | | | | | | | | |
| 10.230 | 33.248 | .1031E+06 | .067 | 133.5 | 139.5 | 133.5609 | 139.5756 | .2190 | .02 |
| 10.261 | 37.537 | .1204E+06 | 1.056 | 134.0 | 140.0 | 133.7086 | 139.7202 | .2910 | .02 |
| 10.303 | 45.807 | .1084E+06 | 1.122 | 134.0 | 140.0 | 133.8751 | 139.8774 | .5774 | .02 |
| 10.295 | 52.065 | .1019E+06 | 1.159 | 134.0 | 140.0 | 134.0374 | 139.9004 | .1024 | .02 |
| 10.278 | 58.352 | .1027E+06 | 1.162 | 134.0 | 140.0 | 134.2132 | 140.0992 | .2040 | .02 |
| 10.264 | 64.647 | .5988E+05 | 1.101 | 134.5 | 140.0 | 134.3575 | 140.1982 | .2024 | .02 |
| 10.252 | 70.020 | .5945E+05 | 1.070 | 134.5 | 140.0 | 134.5012 | 140.2704 | .1501 | .02 |
| 10.290 | 1.794 | .4754E+05 | 1.072 | 135.0 | 140.5 | 134.9330 | 140.2115 | .1104 | .02 |
| 10.198 | 11.193 | .4074E+05 | 1.044 | 135.0 | 140.5 | 135.1731 | 140.3134 | .1014 | .02 |
| 10.236 | 14.374 | .3770E+05 | 1.005 | 135.5 | 140.5 | 135.3413 | 140.4124 | .2501 | .02 |
| | | | | | | | | | |
| 10.257 | 20.713 | .1554E+06 | 1.001 | 135.5 | 140.5 | 135.5072 | 140.5111 | .1114 | .02 |
| 10.297 | 26.262 | .1050E+06 | 1.023 | 136.0 | 140.0 | 136.0075 | 140.7111 | .2074 | .02 |
| 10.306 | 32.283 | .1041E+06 | 1.108 | 136.0 | 140.0 | 136.0175 | 140.1180 | .1104 | .02 |
| 10.289 | 38.752 | .1090E+06 | 1.116 | 136.0 | 140.0 | 136.1124 | 140.1012 | .2024 | .02 |
| 10.295 | 45.806 | .1016E+06 | 1.088 | 136.5 | 140.0 | 136.3201 | 140.0015 | .2024 | .02 |
| 10.323 | 52.062 | .1064E+06 | 1.059 | 136.5 | 140.0 | 136.4516 | 139.8775 | .1104 | .02 |
| 10.300 | 58.370 | .1144E+06 | 1.013 | 136.5 | 140.0 | 136.6275 | 139.7110 | .1104 | .02 |
| 10.196 | 64.751 | .1120E+06 | .932 | 137.0 | 139.5 | 136.7829 | 139.5761 | .2024 | .02 |
| 10.157 | 70.067 | .1044E+06 | .968 | 137.0 | 139.5 | 136.9313 | 139.5001 | .2024 | .02 |
| 10.216 | 1.794 | .2601E+06 | 1.093 | 137.0 | 139.0 | 137.0965 | 139.1624 | .2024 | .02 |
| | | | | | | | | | |
| 10.179 | 11.197 | .2835E+06 | 1.096 | 137.0 | 139.0 | 137.1255 | 139.2154 | .2024 | .02 |
| 10.179 | 14.371 | .2604E+06 | 1.042 | 137.0 | 139.0 | 137.2075 | 139.2154 | .2024 | .02 |
| 10.202 | 20.713 | .2133E+06 | .211 | 137.0 | 139.5 | 137.2611 | 139.2154 | .2024 | .02 |
| 10.211 | 26.262 | .1114E+06 | 1.087 | 137.0 | 139.0 | 137.3151 | 139.2154 | .2024 | .02 |
| 10.207 | 32.283 | .2094E+06 | 1.111 | 137.0 | 139.0 | 137.3151 | 139.2154 | .2024 | .02 |

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4. *Prüfung, Inhalt*

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HISTORICAL DEVELOPMENT OF THE

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| | |
|---|-------|
| 0 | 01584 |
| 1 | 01585 |
| 2 | 01586 |
| 3 | 01587 |
| 4 | 01588 |
| 5 | 01589 |
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HISTORICAL DEVELOPMENT OF

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4. *Prüfung, Inhalt*

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TRB-64

| | 195,1875 | 107 139,2302 | 100 | 2,101,2375 | std.dev. | |
|---|----------|--------------|-----|------------|----------|--------|
| 0 | .00127 | .00365 | | | | 100000 |
| 1 | .00112 | .00154 | | | | 100000 |
| 2 | .00082 | .00082 | | | | 100000 |
| 3 | .00124 | .00082 | | | | 100000 |
| 4 | .00140 | .00082 | | | | 100000 |
| 5 | .00077 | .00077 | | | | 100000 |
| 6 | .00077 | .00077 | | | | 100000 |
| 7 | .00077 | .00077 | | | | 100000 |
| 8 | .00085 | .00085 | | | | 100000 |
| 9 | .00208 | .00100 | | | | 100000 |

REVISION DEVIATION

| | | | | | | |
|---|------|-----|-----|-----|-----|------------------|
| 0 | .005 | .04 | .03 | .02 | .01 | 0.007 had points |
| 1 | " | " | " | " | " | " |
| 2 | " | " | " | " | " | " |
| 3 | " | " | " | " | " | " |
| 4 | " | " | " | " | " | " |
| 5 | " | " | " | " | " | " |
| 6 | " | " | " | " | " | " |
| 7 | " | " | " | " | " | " |
| 8 | " | " | " | " | " | " |
| 9 | " | " | " | " | " | " |

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THIRDS

| time | amplitude | current | rate | reference | | position | | standard deviation | |
|--------|-----------|------------|-------|-----------|-------|----------|----------|--------------------|-------|
| | | | | x | y | x | y | x | y |
| 10.104 | 75.141 | -105.440% | 2.873 | 133.5 | 132.0 | 133.304 | 132.504 | 27.04 | 27.04 |
| 10.105 | 46.731 | -207.440% | 2.764 | 133.0 | 132.5 | 133.2742 | 132.504 | 27.04 | 27.04 |
| 10.106 | 52.109 | -254.440% | 2.752 | 133.0 | 133.0 | 133.1752 | 132.702 | 27.04 | 27.04 |
| 10.107 | 52.163 | -24.39440% | 2.937 | 133.0 | 133.0 | 133.1752 | 132.702 | 27.04 | 27.04 |
| 10.108 | 64.679 | -244.240% | 2.914 | 133.0 | 133.0 | 133.0834 | 132.1510 | 27.04 | 27.04 |
| 10.109 | 70.886 | -155.940% | 2.714 | 133.0 | 133.5 | 133.1332 | 132.6273 | 27.04 | 27.04 |
| 10.110 | 8.171 | -209.440% | 2.873 | 133.0 | 133.0 | 133.1719 | 132.6406 | 27.04 | 27.04 |
| 10.111 | 14.373 | -271.940% | 2.918 | 133.0 | 132.0 | 133.2340 | 132.5785 | 27.04 | 27.04 |
| 10.112 | 20.703 | -260.240% | 2.844 | 133.5 | 132.0 | 133.3076 | 132.1046 | 27.04 | 27.04 |
| 10.121 | 26.257 | -272.340% | 2.710 | 133.5 | 132.5 | 133.4250 | 132.2006 | 27.04 | 27.04 |
| 10.122 | 33.210 | -307.440% | 2.700 | 133.5 | 132.5 | 133.5243 | 132.2006 | 27.04 | 27.04 |
| 10.123 | 39.525 | -307.440% | 2.834 | 133.0 | 133.0 | 133.7020 | 132.7372 | 27.04 | 27.04 |
| 10.124 | 45.792 | -300.140% | 2.931 | 133.0 | 133.0 | 133.5250 | 132.8832 | 27.04 | 27.04 |
| 10.125 | 51.057 | -285.940% | 2.930 | 133.0 | 133.0 | 133.0000 | 132.8832 | 27.04 | 27.04 |
| 10.126 | 56.447 | -216.140% | 2.989 | 133.0 | 133.0 | 133.2903 | 132.1076 | 27.04 | 27.04 |
| 10.127 | 63.574 | -214.440% | 2.988 | 133.5 | 132.0 | 133.3726 | 132.2006 | 27.04 | 27.04 |
| 10.128 | 70.106 | -111.140% | 2.837 | 133.5 | 133.0 | 133.5076 | 132.2006 | 27.04 | 27.04 |
| 10.129 | 1.707 | -277.440% | 2.877 | 133.0 | 133.0 | 133.5987 | 132.3102 | 27.04 | 27.04 |
| 10.202 | 8.182 | -238.440% | 2.845 | 133.0 | 132.5 | 133.7188 | 132.2006 | 27.04 | 27.04 |
| 10.182 | 14.373 | -243.240% | 2.815 | 133.5 | 132.5 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.179 | 20.709 | -314.440% | 2.839 | 133.5 | 132.5 | 133.6426 | 132.2006 | 27.04 | 27.04 |
| 10.208 | 26.254 | -314.440% | 2.914 | 133.0 | 133.0 | 133.7027 | 132.1076 | 27.04 | 27.04 |
| 10.246 | 33.235 | -302.440% | 2.988 | 133.0 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.241 | 37.515 | -309.440% | 2.910 | 133.0 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.241 | 45.014 | -204.440% | 2.894 | 133.5 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.247 | 52.108 | -201.440% | 2.834 | 133.5 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.264 | 58.475 | -271.440% | 2.838 | 133.5 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.126 | 63.616 | -203.440% | 2.913 | 133.0 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.154 | 70.870 | -200.440% | 2.914 | 133.0 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.101 | 1.707 | -277.440% | 2.839 | 133.0 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.149 | 8.182 | -277.440% | 2.839 | 133.0 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.205 | 14.373 | -238.440% | 2.835 | 133.0 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.181 | 20.709 | -238.440% | 2.835 | 133.0 | 133.0 | 133.7734 | 132.1076 | 27.04 | 27.04 |
| 10.171 | 26.254 | -102.440% | 2.711 | 133.0 | 132.5 | 133.7734 | 132.1076 | 27.04 | 27.04 |

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TR01-04

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TRON-2

| | | | | | | |
|-----|-----|-----|-----|-----|------|------------|
| .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | | | 7 | 11 | 36 | 0 |

RESULTS

1948

2-APR-80

| Time | Temp | Wind | Clouds | Remarks |
|------|------|------|--------|---------|
| 0800 | 65 | 10 | 10 | Clear |
| 0900 | 68 | 10 | 10 | Clear |
| 1000 | 70 | 10 | 10 | Clear |
| 1100 | 72 | 10 | 10 | Clear |
| 1200 | 75 | 10 | 10 | Clear |
| 1300 | 78 | 10 | 10 | Clear |
| 1400 | 80 | 10 | 10 | Clear |
| 1500 | 82 | 10 | 10 | Clear |
| 1600 | 85 | 10 | 10 | Clear |
| 1700 | 88 | 10 | 10 | Clear |
| 1800 | 90 | 10 | 10 | Clear |
| 1900 | 92 | 10 | 10 | Clear |
| 2000 | 95 | 10 | 10 | Clear |
| 2100 | 98 | 10 | 10 | Clear |
| 2200 | 100 | 10 | 10 | Clear |
| 2300 | 102 | 10 | 10 | Clear |
| 2400 | 105 | 10 | 10 | Clear |

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THE UNIVERSITY OF CHICAGO

excitation

Director

1997

| | Y | X |
|-----|-----|-----|
| 100 | 100 | 100 |
| 90 | 90 | 90 |
| 80 | 80 | 80 |
| 70 | 70 | 70 |
| 60 | 60 | 60 |
| 50 | 50 | 50 |
| 40 | 40 | 40 |
| 30 | 30 | 30 |
| 20 | 20 | 20 |
| 10 | 10 | 10 |
| 0 | 0 | 0 |

| | X | A |
|-----|---------|------|
| 1 | 35.4413 | 36.1 |
| 2 | 35.4412 | 36.1 |
| 3 | 35.4411 | 36.1 |
| 4 | 35.4410 | 36.1 |
| 5 | 35.4409 | 36.1 |
| 6 | 35.4408 | 36.1 |
| 7 | 35.4407 | 36.1 |
| 8 | 35.4406 | 36.1 |
| 9 | 35.4405 | 36.1 |
| 10 | 35.4404 | 36.1 |
| 11 | 35.4403 | 36.1 |
| 12 | 35.4402 | 36.1 |
| 13 | 35.4401 | 36.1 |
| 14 | 35.4400 | 36.1 |
| 15 | 35.4399 | 36.1 |
| 16 | 35.4398 | 36.1 |
| 17 | 35.4397 | 36.1 |
| 18 | 35.4396 | 36.1 |
| 19 | 35.4395 | 36.1 |
| 20 | 35.4394 | 36.1 |
| 21 | 35.4393 | 36.1 |
| 22 | 35.4392 | 36.1 |
| 23 | 35.4391 | 36.1 |
| 24 | 35.4390 | 36.1 |
| 25 | 35.4389 | 36.1 |
| 26 | 35.4388 | 36.1 |
| 27 | 35.4387 | 36.1 |
| 28 | 35.4386 | 36.1 |
| 29 | 35.4385 | 36.1 |
| 30 | 35.4384 | 36.1 |
| 31 | 35.4383 | 36.1 |
| 32 | 35.4382 | 36.1 |
| 33 | 35.4381 | 36.1 |
| 34 | 35.4380 | 36.1 |
| 35 | 35.4379 | 36.1 |
| 36 | 35.4378 | 36.1 |
| 37 | 35.4377 | 36.1 |
| 38 | 35.4376 | 36.1 |
| 39 | 35.4375 | 36.1 |
| 40 | 35.4374 | 36.1 |
| 41 | 35.4373 | 36.1 |
| 42 | 35.4372 | 36.1 |
| 43 | 35.4371 | 36.1 |
| 44 | 35.4370 | 36.1 |
| 45 | 35.4369 | 36.1 |
| 46 | 35.4368 | 36.1 |
| 47 | 35.4367 | 36.1 |
| 48 | 35.4366 | 36.1 |
| 49 | 35.4365 | 36.1 |
| 50 | 35.4364 | 36.1 |
| 51 | 35.4363 | 36.1 |
| 52 | 35.4362 | 36.1 |
| 53 | 35.4361 | 36.1 |
| 54 | 35.4360 | 36.1 |
| 55 | 35.4359 | 36.1 |
| 56 | 35.4358 | 36.1 |
| 57 | 35.4357 | 36.1 |
| 58 | 35.4356 | 36.1 |
| 59 | 35.4355 | 36.1 |
| 60 | 35.4354 | 36.1 |
| 61 | 35.4353 | 36.1 |
| 62 | 35.4352 | 36.1 |
| 63 | 35.4351 | 36.1 |
| 64 | 35.4350 | 36.1 |
| 65 | 35.4349 | 36.1 |
| 66 | 35.4348 | 36.1 |
| 67 | 35.4347 | 36.1 |
| 68 | 35.4346 | 36.1 |
| 69 | 35.4345 | 36.1 |
| 70 | 35.4344 | 36.1 |
| 71 | 35.4343 | 36.1 |
| 72 | 35.4342 | 36.1 |
| 73 | 35.4341 | 36.1 |
| 74 | 35.4340 | 36.1 |
| 75 | 35.4339 | 36.1 |
| 76 | 35.4338 | 36.1 |
| 77 | 35.4337 | 36.1 |
| 78 | 35.4336 | 36.1 |
| 79 | 35.4335 | 36.1 |
| 80 | 35.4334 | 36.1 |
| 81 | 35.4333 | 36.1 |
| 82 | 35.4332 | 36.1 |
| 83 | 35.4331 | 36.1 |
| 84 | 35.4330 | 36.1 |
| 85 | 35.4329 | 36.1 |
| 86 | 35.4328 | 36.1 |
| 87 | 35.4327 | 36.1 |
| 88 | 35.4326 | 36.1 |
| 89 | 35.4325 | 36.1 |
| 90 | 35.4324 | 36.1 |
| 91 | 35.4323 | 36.1 |
| 92 | 35.4322 | 36.1 |
| 93 | 35.4321 | 36.1 |
| 94 | 35.4320 | 36.1 |
| 95 | 35.4319 | 36.1 |
| 96 | 35.4318 | 36.1 |
| 97 | 35.4317 | 36.1 |
| 98 | 35.4316 | 36.1 |
| 99 | 35.4315 | 36.1 |
| 100 | 35.4314 | 36.1 |

| | Y | X |
|------|------|------|
| 0.73 | 0.74 | 0.72 |
| 0.72 | 0.71 | 0.73 |
| 0.74 | 0.75 | 0.76 |
| 0.75 | 0.76 | 0.77 |
| 0.76 | 0.77 | 0.78 |
| 0.77 | 0.78 | 0.79 |
| 0.78 | 0.79 | 0.80 |
| 0.79 | 0.80 | 0.81 |
| 0.80 | 0.81 | 0.82 |
| 0.81 | 0.82 | 0.83 |
| 0.82 | 0.83 | 0.84 |
| 0.83 | 0.84 | 0.85 |
| 0.84 | 0.85 | 0.86 |
| 0.85 | 0.86 | 0.87 |
| 0.86 | 0.87 | 0.88 |
| 0.87 | 0.88 | 0.89 |
| 0.88 | 0.89 | 0.90 |
| 0.89 | 0.90 | 0.91 |
| 0.90 | 0.91 | 0.92 |
| 0.91 | 0.92 | 0.93 |
| 0.92 | 0.93 | 0.94 |
| 0.93 | 0.94 | 0.95 |
| 0.94 | 0.95 | 0.96 |
| 0.95 | 0.96 | 0.97 |
| 0.96 | 0.97 | 0.98 |
| 0.97 | 0.98 | 0.99 |
| 0.98 | 0.99 | 1.00 |
| 0.99 | 1.00 | 1.01 |
| 1.00 | 1.01 | 1.02 |
| 1.01 | 1.02 | 1.03 |
| 1.02 | 1.03 | 1.04 |
| 1.03 | 1.04 | 1.05 |
| 1.04 | 1.05 | 1.06 |
| 1.05 | 1.06 | 1.07 |
| 1.06 | 1.07 | 1.08 |
| 1.07 | 1.08 | 1.09 |
| 1.08 | 1.09 | 1.10 |
| 1.09 | 1.10 | 1.11 |
| 1.10 | 1.11 | 1.12 |
| 1.11 | 1.12 | 1.13 |
| 1.12 | 1.13 | 1.14 |
| 1.13 | 1.14 | 1.15 |
| 1.14 | 1.15 | 1.16 |
| 1.15 | 1.16 | 1.17 |
| 1.16 | 1.17 | 1.18 |
| 1.17 | 1.18 | 1.19 |
| 1.18 | 1.19 | 1.20 |
| 1.19 | 1.20 | 1.21 |
| 1.20 | 1.21 | 1.22 |
| 1.21 | 1.22 | 1.23 |
| 1.22 | 1.23 | 1.24 |
| 1.23 | 1.24 | 1.25 |
| 1.24 | 1.25 | 1.26 |
| 1.25 | 1.26 | 1.27 |
| 1.26 | 1.27 | 1.28 |
| 1.27 | 1.28 | 1.29 |
| 1.28 | 1.29 | 1.30 |
| 1.29 | 1.30 | 1.31 |
| 1.30 | 1.31 | 1.32 |
| 1.31 | 1.32 | 1.33 |
| 1.32 | 1.33 | 1.34 |
| 1.33 | 1.34 | 1.35 |
| 1.34 | 1.35 | 1.36 |
| 1.35 | 1.36 | 1.37 |
| 1.36 | 1.37 | 1.38 |
| 1.37 | 1.38 | 1.39 |
| 1.38 | 1.39 | 1.40 |
| 1.39 | 1.40 | 1.41 |
| 1.40 | 1.41 | 1.42 |
| 1.41 | 1.42 | 1.43 |
| 1.42 | 1.43 | 1.44 |
| 1.43 | 1.44 | 1.45 |
| 1.44 | 1.45 | 1.46 |
| 1.45 | 1.46 | 1.47 |
| 1.46 | 1.47 | 1.48 |
| 1.47 | 1.48 | 1.49 |
| 1.48 | 1.49 | 1.50 |
| 1.49 | 1.50 | 1.51 |
| 1.50 | 1.51 | 1.52 |
| 1.51 | 1.52 | 1.53 |
| 1.52 | 1.53 | 1.54 |
| 1.53 | 1.54 | 1.55 |
| 1.54 | 1.55 | 1.56 |
| 1.55 | 1.56 | 1.57 |
| 1.56 | 1.57 | 1.58 |
| 1.57 | 1.58 | 1.59 |
| 1.58 | 1.59 | 1.60 |
| 1.59 | 1.60 | 1.61 |
| 1.60 | 1.61 | 1.62 |
| 1.61 | 1.62 | 1.63 |
| 1.62 | 1.63 | 1.64 |
| 1.63 | 1.64 | 1.65 |
| 1.64 | 1.65 | 1.66 |
| 1.65 | 1.66 | 1.67 |
| 1.66 | 1.67 | 1.68 |
| 1.67 | 1.68 | 1.69 |
| 1.68 | 1.69 | 1.70 |
| 1.69 | 1.70 | 1.71 |
| 1.70 | 1.71 | 1.72 |
| 1.71 | 1.72 | 1.73 |
| 1.72 | 1.73 | 1.74 |
| 1.73 | 1.74 | 1.75 |
| 1.74 | 1.75 | 1.76 |
| 1.75 | 1.76 | 1.77 |
| 1.76 | 1.77 | 1.78 |
| 1.77 | 1.78 | 1.79 |
| 1.78 | 1.79 | 1.80 |
| 1.79 | 1.80 | 1.81 |
| 1.80 | 1.81 | 1.82 |
| 1.81 | 1.82 | |

| Year | Current | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1994 | 39,542 | 45,835 | 53,107 | 59,297 | 64,652 | 70,202 | 75,941 | 81,869 | 87,986 | 94,292 | 100,787 | 107,471 | 114,344 | 121,405 | 128,654 | 136,091 | 143,716 | 151,529 | 159,530 | 167,719 | 176,096 | 184,661 | 193,415 | 202,358 | 211,489 | 220,808 | 230,315 | 240,010 | 249,893 | 259,964 | 270,222 | 280,667 | 291,298 | 302,115 | 313,118 | 324,307 | 335,681 | 347,240 | 358,975 | 370,886 | 382,973 | 395,236 | 407,675 | 420,289 | 433,078 | 446,042 | 459,180 | 472,492 | 485,978 | 499,639 | 513,475 | 527,486 | 541,671 | 556,030 | 570,563 | 585,270 | 600,151 | 615,206 | 630,435 | 645,838 | 661,415 | 677,166 | 693,091 | 709,190 | 725,463 | 741,910 | 758,531 | 775,326 | 792,295 | 809,438 | 826,755 | 844,246 | 861,911 | 879,750 | 897,763 | 915,950 | 934,311 | 952,846 | 971,555 | 990,438 | 1,009,494 | 1,028,723 | 1,048,125 | 1,067,700 | 1,087,448 | 1,107,369 | 1,127,463 | 1,147,730 | 1,168,169 | 1,188,780 | 1,209,563 | 1,230,518 | 1,251,645 | 1,272,944 | 1,294,415 | 1,316,058 | 1,337,873 | 1,359,860 | 1,382,019 | 1,404,350 | 1,426,853 | 1,449,528 | 1,472,375 | 1,495,394 | 1,518,585 | 1,541,948 | 1,565,483 | 1,589,190 | 1,613,069 | 1,637,120 | 1,661,343 | 1,685,738 | 1,710,305 | 1,735,044 | 1,760,055 | 1,785,338 | 1,810,893 | 1,836,720 | 1,862,819 | 1,889,190 | 1,915,833 | 1,942,748 | 1,969,935 | 1,997,394 | 2,025,125 | 2,053,128 | 2,081,403 | 2,109,850 | 2,138,569 | 2,167,560 | 2,196,832 | 2,226,385 | 2,256,219 | 2,286,334 | 2,316,730 | 2,347,407 | 2,378,365 | 2,409,604 | 2,441,125 | 2,472,928 | 2,505,013 | 2,537,380 | 2,570,029 | 2,602,960 | 2,636,173 | 2,669,668 | 2,703,445 | 2,737,504 | 2,771,845 | 2,806,468 | 2,841,373 | 2,876,560 | 2,912,029 | 2,947,780 | 2,983,813 | 3,020,128 | 3,056,725 | 3,093,604 | 3,130,765 | 3,168,208 | 3,205,933 | 3,243,940 | 3,282,229 | 3,320,800 | 3,359,653 | 3,398,788 | 3,438,205 | 3,477,904 | 3,517,885 | 3,558,148 | 3,598,693 | 3,639,520 | 3,680,629 | 3,722,020 | 3,763,693 | 3,805,648 | 3,847,885 | 3,890,404 | 3,933,205 | 3,976,288 | 4,019,653 | 4,063,299 | 4,107,226 | 4,151,435 | 4,195,926 | 4,240,699 | 4,285,754 | 4,331,091 | 4,376,710 | 4,422,611 | 4,468,794 | 4,515,259 | 4,562,006 | 4,609,035 | 4,656,346 | 4,703,939 | 4,751,814 | 4,799,971 | 4,848,410 | 4,897,131 | 4,946,134 | 4,995,419 | 5,044,986 | 5,094,835 | 5,144,966 | 5,195,379 | 5,246,074 | 5,297,051 | 5,348,310 | 5,399,851 |

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| | |
|----------|----------|
| 136.5945 | 136.5945 |
| 137.1165 | 137.1165 |
| 137.3275 | 137.3275 |
| 137.5378 | 137.5378 |
| 137.7470 | 137.7470 |
| 137.9562 | 137.9562 |
| 138.1650 | 138.1650 |
| 138.3740 | 138.3740 |
| 138.5837 | 138.5837 |
| 138.7930 | 138.7930 |

| | | |
|------|-------|-------|
| 9485 | 132.5 | 137.0 |
| 9485 | 134.5 | 137.0 |
| 9411 | 133.5 | 137.0 |
| 9320 | 133.0 | 137.0 |
| 9327 | 133.0 | 138.0 |
| 9326 | 133.0 | 138.0 |
| 9455 | 133.0 | 138.0 |
| 7537 | 133.0 | 138.5 |
| 7544 | 133.0 | 138.5 |
| 9347 | 132.0 | 138.0 |

| | | |
|--------|--------|------------|
| 20,492 | 26,989 | 75,357 10% |
| 20,532 | 33,273 | 7,307E+05 |
| 20,518 | 39,569 | 8,512E+05 |
| 20,475 | 45,831 | 8179E+05 |
| 20,515 | 52,117 | 1063E+06 |
| 20,518 | 58,375 | 1047E+06 |
| 20,473 | 64,617 | 1056E+06 |
| 20,495 | 70,804 | 6599E+06 |
| 20,461 | 1,039 | 7593E+05 |
| 20,453 | 1,039 | 8,067E+07 |

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|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 | 2101 | 2102 | 2103 | 2104 | 2105 | 2106 | 2107 | 2108 | 2109 | 2110 | 2111 | 2112 | 2113 | 2114 | 2115 | 2116 | 2117 | 2118 | 2119 | 2120 | 2121 | 2122 | 2123 | 2124 | 2125 | 2126 | 2127 | 2128 | 2129 | 2130 | 2131 | 2132 | 2133 | 2134 | 2135 | 2136 | 2137 | 2138 | 2139 | 2140 | 2141 | 2142 | 2143 | 2144 | 2145 | 2146 | 2147 | 2148 | 2149 | 2150 | 2151 | 2152 | 2153 | 2154 | 2155 | 2156 | 2157 | 2158 | 2159 | 2160 | 2161 | 2162 | 2163 | 2164 | 2165 | 2166 | 2167 | 2168 | 2169 | 2170 | 2171 | 2172 | 2173 | 2174 | 2175 | 2176 | 2177 | 2178 | 2179 | 2180 | 2181 | 2182 | 2183 | 2184 | 2185 | 2186 | 2187 | 2188 | 2189 | 2190 | 2191 | 2192 | 2193 | 2194 | 2195 | 2196 | 2197 | 2198 | 2199 | 2200 | 2201 | 2202 | 2203 | 2204 | 2205 | 2206 | 2207 | 2208 | 2209 | 2210 | 2211 | 2212 | 2213 | 2214 | 2215 | 2216 | 2217 | 2218 | 2219 | 2220 | 2221 | 2222 | 2223 | 2224 | 2225 | 2226 | 2227 | 2228 | 2229 | 2230 | 2231 | 2232 | 2233 | 2234 | 2235 | 2236 | 2237 | 2238 | 2239 | 2240 | 2241 | 2242 | 2243 | 2244 | 2245 | 2246 | 2247 | 2248 | 2249 | 2250 | 2251 | 2252 | 2253 | 2254 | 2255 | 2256 | 2257 | 2258 | 2259 | 2260 | 2261 | 2262 | 2263 | 2264 | 2265 | 2266 | 2267 | 2268 | 2269 | 2270 | 2271 | 2272 | 2273 | 2274 | 2275 | 2276 | 2277 | 2278 | 2279 | 2280 | 2281 | 2282 | 2283 | 2284 | 2285 | 2286 | 2287 | 2288 | 2289 | 2290 | 2291 | 2292 | 2293 | 2294 | 2295 | 2296 | 2297 | 2298 | 2299 | 2300 | 2301 | 2302 | 2303 | 2304 | 2305 | 2306 | 2307 | 2308 | 2309 | 2310 | 2311 | 2312 | 2313 | 2314 | 2315 | 2316 | 2317 | 2318 | 2319 | 2320 | 2321 | 2322 | 2323 | 2324 | 2325 | 2326 | 2327 | 2328 | 2329 | 2330 | 2331 | 2332 | 2333 | 2334 | 2335 | 2336 | 2337 | 2338 | 2339 | 2340 | 2341 | 2342 | 2343 | 2344 | 2345 | 2346 | 2347 | 2348 | 2349 | 2350 | 2351 | 2352 | 2353 | 2354 | 2355 | 2356 | 2357 | 2358 | 2359 | 2360 | 2361 | 2362 | 2363 | 2364 | 2365 | 2366 | 2367 | 2368 | 2369 | 2370 | 2371 | 2372 | 2373 | 2374 | 2375 | 2376 | 2377 | 2378</ |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------|

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|--------|--------|---------|
| 20,336 | 34,426 | 55,245 |
| 20,432 | 20,774 | 124,346 |
| 20,505 | 27,017 | 131,346 |
| 20,442 | 37,749 | 133,346 |
| 20,574 | 32,586 | 143,046 |
| 20,560 | 45,379 | 131,346 |
| 20,571 | 52,233 | 127,346 |
| 20,546 | 53,404 | 128,346 |
| 20,579 | 64,681 | 54,245 |

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| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | 260 | 261 | 262 | 263 | 264 | 265 | 266 | 267 | 268 | 269 | 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 | 278 | 279 | 280 | 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289 | 290 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 | 331 | 332 | 333 | 334 | 335 | 336 | 337 | 338 | 339 | 340 | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 | 381 | 382 | 383 | 384 | 385 | 386 | 387 | 388 | 389 | 390 | 391 | 392 | 393 | 394 | 395 | 396 | 397 | 398 | 399 | 400 | 401 | 402 | 403 | 404 | 405 | 406 | 407 | 408 | 409 | 410 | 411 | 412 | 413 | 414 | 415 | 416 | 417 | 418 | 419 | 420 | 421 | 422 | 423 | 424 | 425 | 426 | 427 | 428 | 429 | 430 | 431 | 432 | 433 | 434 | 435 | 436 | 437 | 438 | 439 | 440 | 441 | 442 | 443 | 444 | 445 | 446 | 447 | 448 | 449 | 450 | 451 | 452 | 453 | 454 | 455 | 456 | 457 | 458 | 459 | 460 | 461 | 462 | 463 | 464 | 465 | 466 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

1000

| | | |
|------|-------|-------|
| 1912 | 1,000 | 1,000 |
| 1913 | 1,000 | 1,000 |
| 1914 | 1,000 | 1,000 |
| 1915 | 1,000 | 1,000 |
| 1916 | 1,000 | 1,000 |
| 1917 | 1,000 | 1,000 |
| 1918 | 1,000 | 1,000 |
| 1919 | 1,000 | 1,000 |
| 1920 | 1,000 | 1,000 |
| 1921 | 1,000 | 1,000 |
| 1922 | 1,000 | 1,000 |
| 1923 | 1,000 | 1,000 |
| 1924 | 1,000 | 1,000 |
| 1925 | 1,000 | 1,000 |
| 1926 | 1,000 | 1,000 |
| 1927 | 1,000 | 1,000 |
| 1928 | 1,000 | 1,000 |
| 1929 | 1,000 | 1,000 |
| 1930 | 1,000 | 1,000 |
| 1931 | 1,000 | 1,000 |
| 1932 | 1,000 | 1,000 |
| 1933 | 1,000 | 1,000 |
| 1934 | 1,000 | 1,000 |
| 1935 | 1,000 | 1,000 |
| 1936 | 1,000 | 1,000 |
| 1937 | 1,000 | 1,000 |
| 1938 | 1,000 | 1,000 |
| 1939 | 1,000 | 1,000 |
| 1940 | 1,000 | 1,000 |
| 1941 | 1,000 | 1,000 |
| 1942 | 1,000 | 1,000 |
| 1943 | 1,000 | 1,000 |
| 1944 | 1,000 | 1,000 |
| 1945 | 1,000 | 1,000 |
| 1946 | 1,000 | 1,000 |
| 1947 | 1,000 | 1,000 |
| 1948 | 1,000 | 1,000 |
| 1949 | 1,000 | 1,000 |
| 1950 | 1,000 | 1,000 |
| 1951 | 1,000 | 1,000 |
| 1952 | 1,000 | 1,000 |
| 1953 | 1,000 | 1,000 |
| 1954 | 1,000 | 1,000 |
| 1955 | 1,000 | 1,000 |
| 1956 | 1,000 | 1,000 |
| 1957 | 1,000 | 1,000 |
| 1958 | 1,000 | 1,000 |
| 1959 | 1,000 | 1,000 |
| 1960 | 1,000 | 1,000 |
| 1961 | 1,000 | 1,000 |
| 1962 | 1,000 | 1,000 |
| 1963 | 1,000 | 1,000 |
| 1964 | 1,000 | 1,000 |
| 1965 | 1,000 | 1,000 |
| 1966 | 1,000 | 1,000 |
| 1967 | 1,000 | 1,000 |
| 1968 | 1,000 | 1,000 |
| 1969 | 1,000 | 1,000 |
| 1970 | 1,000 | 1,000 |
| 1971 | 1,000 | 1,000 |
| 1972 | 1,000 | 1,000 |
| 1973 | 1,000 | 1,000 |
| 1974 | 1,000 | 1,000 |
| 1975 | 1,000 | 1,000 |
| 1976 | 1,000 | 1,000 |
| 1977 | 1,000 | 1,000 |
| 1978 | 1,000 | 1,000 |
| 1979 | 1,000 | 1,000 |
| 1980 | 1,000 | 1,000 |
| 1981 | 1,000 | 1,000 |
| 1982 | 1,000 | 1,000 |
| 1983 | 1,000 | 1,000 |
| 1984 | 1,000 | 1,000 |
| 1985 | 1,000 | 1,000 |
| 1986 | 1,000 | 1,000 |
| 1987 | 1,000 | 1,000 |
| 1988 | 1,000 | 1,000 |
| 1989 | 1,000 | 1,000 |
| 1990 | 1,000 | 1,000 |
| 1991 | 1,000 | 1,000 |
| 1992 | 1,000 | 1,000 |
| 1993 | 1,000 | 1,000 |
| 1994 | 1,000 | 1,000 |
| 1995 | 1,000 | 1,000 |
| 1996 | 1,000 | 1,000 |
| 1997 | 1,000 | 1,000 |
| 1998 | 1,000 | 1,000 |
| 1999 | 1,000 | 1,000 |
| 2000 | 1,000 | 1,000 |
| 2001 | 1,000 | 1,000 |
| 2002 | 1,000 | 1,000 |
| 2003 | 1,000 | 1,000 |
| 2004 | 1,000 | 1,000 |
| 2005 | 1,000 | 1,000 |
| 2006 | 1,000 | 1,000 |
| 2007 | 1,000 | 1,000 |
| 2008 | 1,000 | 1,000 |
| 2009 | 1,000 | 1,000 |
| 2010 | 1,000 | 1,000 |
| 2011 | 1,000 | 1,000 |
| 2012 | 1,000 | 1,000 |
| 2013 | 1,000 | 1,000 |
| 2014 | 1,000 | 1,000 |
| 2015 | 1,000 | 1,000 |
| 2016 | 1,000 | 1,000 |

| Year | Population | Population | Population |
|------|------------|------------|------------|
| 1900 | 1,000,000 | 1,000,000 | 1,000,000 |
| 1910 | 1,500,000 | 1,500,000 | 1,500,000 |
| 1920 | 2,000,000 | 2,000,000 | 2,000,000 |
| 1930 | 2,500,000 | 2,500,000 | 2,500,000 |
| 1940 | 3,000,000 | 3,000,000 | 3,000,000 |
| 1950 | 3,500,000 | 3,500,000 | 3,500,000 |
| 1960 | 4,000,000 | 4,000,000 | 4,000,000 |
| 1970 | 4,500,000 | 4,500,000 | 4,500,000 |
| 1980 | 5,000,000 | 5,000,000 | 5,000,000 |
| 1990 | 5,500,000 | 5,500,000 | 5,500,000 |
| 2000 | 6,000,000 | 6,000,000 | 6,000,000 |

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 20.53 | 33.599 | .1388E+06 | .984 | 136.0 | 140.0 | 136.2248 | 140.1176 | .4132E-03 | .6907E-03 |
| 20.565 | 45.836 | .1298E+06 | .940 | 136.5 | 140.0 | 136.3974 | 140.0096 | .1081E-02 | .1137E-02 |
| 20.537 | 52.143 | .1362E+06 | .910 | 136.5 | 140.0 | 136.5738 | 139.8828 | .1303E-02 | .8908E-03 |
| 20.568 | 58.413 | .1632E+06 | .923 | 137.0 | 140.0 | 136.7357 | 139.7251 | .1196E-02 | .7008E-03 |
| 20.520 | 64.671 | .1395E+06 | .791 | 137.0 | 139.5 | 136.8771 | 139.5801 | .1317E-02 | .3801E-03 |
| 20.470 | 70.880 | .1343E+06 | .812 | 137.0 | 139.5 | 137.0159 | 139.3827 | .8114E-03 | .2438E-03 |
| 20.433 | 1.823 | .1251E+06 | .945 | 137.0 | 139.0 | 137.1319 | 139.1762 | .1647E-02 | .1075E-02 |
| 20.481 | 8.188 | .1156E+06 | .957 | 137.0 | 139.0 | 137.2285 | 138.9843 | .9787E-03 | .8276E-03 |
| 20.431 | 14.416 | .1024E+06 | .939 | 137.0 | 139.0 | 137.2836 | 138.8941 | .7478E-03 | .4958E-03 |
| 20.439 | 20.787 | .8450E+05 | .686 | 137.5 | 138.5 | 137.3420 | 138.5445 | .1203E-02 | .7230E-03 |
| 20.487 | 27.008 | .1601E+06 | .901 | 137.5 | 138.0 | 137.3296 | 138.4279 | .6970E-01 | .1453E+00 |
| 20.523 | 33.288 | .1068E+06 | .930 | 137.5 | 138.0 | 137.3607 | 138.1545 | .8654E-03 | .1304E-02 |
| 20.548 | 39.588 | .1045E+06 | .926 | 137.5 | 138.0 | 137.3220 | 137.9821 | .7794E-03 | .6438E-03 |
| 20.534 | 45.864 | .1225E+06 | .969 | 137.0 | 138.0 | 137.2869 | 137.7676 | .1182E-02 | .4903E-03 |
| 20.529 | 52.136 | .9632E+05 | .783 | 137.0 | 137.5 | 137.2207 | 137.9011 | .1043E-02 | .4321E-03 |
| 20.554 | 58.418 | .8469E+05 | .955 | 137.0 | 137.0 | 137.1348 | 137.2693 | .1219E-02 | .7382E-03 |
| 20.546 | 64.673 | .7833E+05 | 1.024 | 137.0 | 137.0 | 137.0302 | 137.0951 | .8500E-03 | .2088E-03 |
| 20.546 | 70.902 | .8633E+05 | 1.019 | 137.0 | 137.0 | 136.9272 | 136.9537 | .7761E-03 | .4876E-03 |
| 20.492 | 1.827 | .9401E+05 | .954 | 137.0 | 137.0 | 136.7999 | 136.7728 | .1710E-02 | .1310E-02 |
| 20.526 | 8.223 | .1000E+06 | .758 | 136.5 | 136.5 | 136.5863 | 136.6223 | .7084E-03 | .9099E-03 |
| 20.498 | 14.426 | .1002E+06 | .749 | 136.5 | 136.5 | 136.4011 | 136.4917 | .1054E-02 | .4505E-03 |
| 20.484 | 20.793 | .1012E+06 | .858 | 136.0 | 136.5 | 136.1988 | 136.3931 | .3269E-03 | .4138E-03 |
| 20.492 | 27.034 | .1267E+06 | 1.035 | 136.0 | 136.0 | 135.9922 | 136.2445 | .9208E-03 | .1109E-02 |
| 20.523 | 33.322 | .1321E+06 | 1.046 | 136.0 | 136.0 | 135.7903 | 136.1643 | .1088E-02 | .8518E-03 |

ORIGINAL FILED IN
OF FOR QUARTY

| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .03193 | .00768 | -.00711 | .00367 | -.00465 | .00767 |
| 1 | -.00975 | -.01428 | -.01144 | -.01178 | .00350 | -.00717 |
| 2 | -.00826 | -.01101 | -.00819 | -.01743 | .00048 | .01408 |
| 3 | .01413 | .01554 | .00413 | -.00340 | -.01751 | -.00475 |
| 4 | .00123 | .01099 | .01411 | .01342 | .03531 | -.00907 |
| 5 | -.02370 | -.01257 | -.00061 | .00478 | .01148 | .00405 |
| 6 | .00842 | .00126 | .00134 | -.00843 | -.00167 | -.00654 |
| 7 | -.00854 | .00319 | -.00047 | .00631 | -.02288 | .00130 |
| 8 | -.02280 | -.01953 | -.00537 | .01056 | .00755 | .00754 |
| 9 | .02633 | -.00882 | -.01305 | -.02903 | .02465 | .04134 |

x0= 135.2586 y0= 138.2410 r0= 2.10231614 std.dev.= .01463532

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e" | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 3 | 6 | 17 | 33 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

100-10

ORIGINAL PAGE IS
OF POOR QUALITY

TRE-04

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .03146 | .00728 | -.00342 | -.00344 | -.00480 | -.00764 |
| 1 | -.00951 | -.01418 | -.01128 | -.01157 | -.00376 | -.00188 |
| 2 | -.00793 | -.01065 | -.02981 | -.01705 | -.00086 | -.01446 |
| 3 | .01449 | .01987 | .00443 | -.00313 | -.01529 | -.00920 |
| 4 | .00133 | .01102 | .01408 | .01337 | .03516 | -.00729 |
| 5 | -.02408 | -.01303 | -.00114 | .00398 | .01082 | -.00331 |
| 6 | .00761 | .00039 | .00041 | -.00942 | -.00270 | -.00902 |
| 7 | -.00966 | .00204 | -.00163 | .00514 | .00654 | -.00033 |
| 8 | -.02396 | -.02067 | -.00647 | .00950 | .00807 | .00807 |
| 9 | .02542 | -.00966 | -.01381 | -.02772 | .02494 | .00081 |

x0= 135.2594 y0= 138.2410 r0= 2.10271215 std.dev.= .01444098

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 2 | 7 | 15 | 34 | 1 |

| | | | |
|--------------------|-----------|-----------|-----------|
| | Loarse | Fine | Track |
| | 1.0 | 1.0 | 64.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .1830E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|---------------|---------|---------|---------|---------|
| Constants: | .33700 | .28700 | .37800 | .28000 |
| Displacement: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 20.582 | 39.536 | -.2535E+04 | 2.927 | 135.5 | 136.0 | 135.7516 | 136.1527 | .5787E-02 | .7574E-03 |
| 20.582 | 45.847 | -.1524E+04 | 2.937 | 135.5 | 136.0 | 135.5442 | 136.1500 | .2070E-02 | .5479E-03 |
| 20.582 | 52.134 | -.5626E+02 | 2.991 | 135.5 | 136.0 | 135.3427 | 136.1618 | .2483E-02 | .1320E-02 |
| 20.565 | 58.383 | .2308E+04 | 2.999 | 135.0 | 136.0 | 135.1343 | 136.1640 | .2808E-02 | .1060E-02 |
| 20.551 | 64.648 | .2134E+04 | 3.041 | 135.0 | 136.0 | 134.9535 | 136.2126 | .2093E-02 | .1423E-02 |
| 20.515 | 70.884 | .1476E+05 | 3.015 | 134.5 | 136.0 | 134.3470 | 136.3119 | .4716E-01 | .7373E-02 |
| 20.464 | 1.831 | .1609E+05 | 2.925 | 134.5 | 136.5 | 134.0874 | 136.4412 | .5283E-01 | .6721E-02 |
| 20.526 | 8.206 | .1549E+05 | 2.854 | 134.5 | 136.5 | 133.9676 | 136.5804 | .8976E-02 | .1542E-02 |
| 20.526 | 14.404 | .3797E+05 | 2.838 | 134.0 | 136.5 | 133.8737 | 136.6727 | .1467E-02 | .1339E-02 |
| 20.467 | 20.713 | .3688E+05 | 2.930 | 134.0 | 137.0 | 133.7265 | 136.8045 | .1057E-02 | .1099E-02 |

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 20.551 | 26.983 | .4109E+05 | 2.903 | 133.5 | 137.0 | 133.5874 | 136.9611 | .1201E-02 | .1074E-02 |
| 20.523 | 33.300 | .4123E+05 | 2.901 | 133.5 | 137.0 | 133.4788 | 137.1291 | .1070E-02 | .1007E-02 |
| 20.501 | 39.574 | .4642E+05 | 2.809 | 133.5 | 137.5 | 133.3727 | 137.3455 | .6180E-02 | .6949E-02 |
| 20.464 | 45.828 | .3913E+05 | 2.790 | 133.0 | 137.5 | 133.2920 | 137.5621 | .1027E-02 | .1197E-02 |
| 20.487 | 52.117 | .4415E+05 | 2.945 | 133.0 | 138.0 | 133.2432 | 137.8062 | .1259E-02 | .5110E-03 |
| 20.557 | 58.378 | .4361E+05 | 2.952 | 133.0 | 138.0 | 133.1935 | 137.9972 | .1530E-02 | .1418E-02 |
| 20.520 | 64.644 | .4409E+05 | 2.913 | 133.0 | 138.0 | 133.1629 | 138.1703 | .1284E-02 | .2700E-03 |
| 20.475 | 70.916 | .3566E+05 | 2.707 | 133.0 | 138.5 | 133.1496 | 138.3792 | .1213E-02 | .5639E-03 |
| 20.498 | 1.795 | .3749E+05 | 2.728 | 133.0 | 138.5 | 133.1766 | 138.6420 | .8569E-03 | .7063E-03 |
| 20.453 | 8.171 | .4009E+05 | 2.896 | 133.0 | 139.0 | 133.2353 | 138.8669 | .6489E-03 | .1419E-02 |

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 20.431 | 14.409 | .4130E+05 | 2.940 | 133.0 | 139.0 | 133.3001 | 139.0112 | .6044E-03 | .1076E-02 |
| 20.450 | 20.740 | .4932E+05 | 2.850 | 133.5 | 139.0 | 133.3794 | 139.2136 | .1002E-02 | .1073E-02 |
| 20.442 | 26.984 | .5085E+05 | 2.695 | 133.5 | 139.5 | 133.5014 | 139.4101 | .4669E-03 | .8741E-03 |
| 20.473 | 33.297 | .5084E+05 | 2.700 | 133.5 | 139.5 | 133.6399 | 139.6157 | .9002E-03 | .5873E-03 |
| 20.574 | 39.549 | .5016E+05 | 2.893 | 134.0 | 140.0 | 133.7549 | 139.7579 | .1065E-02 | .9100E-03 |
| 20.554 | 45.832 | .4783E+05 | 2.954 | 134.0 | 140.0 | 133.9173 | 139.9091 | .2310E-02 | .1652E-02 |
| 20.602 | 52.135 | .4686E+05 | 2.971 | 134.0 | 140.0 | 134.0815 | 140.0244 | .1379E-02 | .1263E-02 |
| 20.562 | 58.406 | .4709E+05 | 2.991 | 134.0 | 140.0 | 134.2509 | 140.1239 | .1087E-02 | .1211E-02 |
| 20.579 | 64.642 | .2929E+05 | 3.014 | 134.0 | 140.0 | 134.3649 | 140.2213 | .5419E-01 | .5566E-02 |
| 20.484 | 70.902 | .1209E+05 | 2.974 | 135.0 | 140.5 | 134.9446 | 140.3161 | .9231E-02 | .4968E-01 |

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 20.495 | 1.809 | .3428E+04 | 2.879 | 135.0 | 140.5 | 135.1626 | 140.3350 | .8837E-02 | .6470E-03 |
| 20.540 | 8.204 | .3976E+03 | 2.852 | 135.5 | 140.5 | 135.3420 | 140.3570 | .4008E-02 | .1283E-02 |
| 20.534 | 14.405 | .6631E+03 | 2.808 | 135.5 | 140.5 | 135.5177 | 140.3637 | .2718E-02 | .6057E-03 |
| 20.543 | 20.767 | .8049E+03 | 2.799 | 135.5 | 140.5 | 135.7570 | 140.3410 | .1409E-02 | .1204E-02 |
| 20.548 | 27.003 | .6414E+05 | 2.918 | 136.0 | 140.0 | 135.7794 | 140.3235 | .8553E-02 | .8048E-01 |

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7801-01

| | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|
| 20.543 | 39.571 | .6031E+05 | 2.926 | 136.0 | 140.0 | 136.2096 | 140.1283 | .766E-03 |
| 20.593 | 45.839 | .5901E+05 | 2.905 | 136.5 | 140.0 | 136.3878 | 140.0243 | .1137E-02 |
| 20.579 | 52.114 | .6020E+05 | 2.890 | 136.5 | 140.0 | 136.5616 | 139.8979 | .5497E-03 |
| 20.593 | 58.413 | .5799E+05 | 2.896 | 137.0 | 140.0 | 136.7206 | 139.7381 | .1012E-02 |
| 20.487 | 64.653 | .5233E+05 | 2.793 | 137.0 | 139.5 | 136.8640 | 139.6015 | .1804E-02 |
| 20.473 | 70.898 | .5169E+05 | 2.762 | 137.0 | 139.5 | 137.0047 | 139.4043 | .1773E-02 |
| 20.506 | 1.819 | .5925E+05 | 2.885 | 137.0 | 139.0 | 137.1134 | 139.1890 | .1077E-02 |
| 20.512 | 8.199 | .4635E+05 | 2.896 | 137.0 | 139.0 | 137.2140 | 138.9913 | .7713E-03 |
| 20.450 | 14.418 | .4615E+05 | 2.883 | 137.0 | 139.0 | 137.2711 | 138.8197 | .1033E-02 |
| 20.475 | 20.737 | .4432E+05 | 2.670 | 137.5 | 138.5 | 137.3311 | 138.5924 | .1067E-02 |
| 20.456 | 27.000 | .4185E+05 | 2.694 | 137.5 | 138.5 | 137.3625 | 138.3590 | .8390E-03 |
| 20.523 | 33.283 | .4790E+05 | 2.886 | 137.5 | 138.0 | 137.3905 | 138.1462 | .9320E-03 |
| 20.504 | 39.549 | .4749E+05 | 2.891 | 137.5 | 138.0 | 137.3121 | 137.9919 | .1364E-02 |
| 20.504 | 45.863 | .5040E+05 | 2.922 | 137.0 | 138.0 | 137.2761 | 137.7829 | .1007E-02 |
| 20.532 | 52.109 | .4897E+05 | 2.747 | 137.0 | 137.5 | 137.2063 | 137.5260 | .5189E-03 |
| 20.498 | 58.401 | .4369E+05 | 2.902 | 137.0 | 137.0 | 137.1207 | 137.2853 | .1204E-02 |
| 20.495 | 64.674 | .4245E+05 | 2.963 | 137.0 | 137.0 | 137.0129 | 137.1007 | .1224E-02 |
| 20.490 | 70.905 | .4379E+05 | 2.966 | 137.0 | 137.0 | 136.9077 | 136.9609 | .1483E-02 |
| 20.509 | 1.820 | .4485E+05 | 2.915 | 137.0 | 137.0 | 136.7831 | 136.7920 | .6590E-03 |
| 20.526 | 8.191 | .5252E+05 | 2.742 | 136.5 | 136.5 | 136.5694 | 136.6433 | .1044E-02 |
| 20.475 | 14.404 | .5270E+05 | 2.721 | 136.5 | 136.5 | 136.3883 | 136.5108 | .7390E-03 |
| 20.518 | 20.751 | .5307E+05 | 2.805 | 136.0 | 136.5 | 136.1904 | 136.4084 | .1534E-02 |
| 20.562 | 27.005 | .5793E+05 | 2.977 | 136.0 | 136.0 | 135.9795 | 136.2624 | .1324E-02 |
| 20.577 | 33.304 | .5891E+05 | 2.992 | 136.0 | 136.0 | 135.7746 | 136.1796 | .1095E-02 |

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| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .05840 | .02247 | -.00789 | -.00900 | -.00750 | -.03894 |
| 1 | .03040 | .02901 | -.00721 | -.00226 | -.00212 | -.00405 |
| 2 | .01900 | -.02833 | -.04919 | -.03243 | -.01700 | -.00199 |
| 3 | .00301 | -.00077 | -.01511 | -.00469 | -.01105 | -.00128 |
| 4 | .01315 | .01729 | .01358 | .01238 | .00948 | -.02384 |
| 5 | -.02404 | -.00172 | .02178 | .04042 | .02893 | -.00215 |
| 6 | -.00115 | .00217 | -.00329 | -.01675 | -.00172 | -.00729 |
| 7 | -.02075 | -.00704 | .00578 | .00422 | .00810 | -.00132 |
| 8 | -.02482 | -.02309 | -.01551 | .00352 | -.00835 | -.00035 |
| 9 | .01619 | -.01993 | -.02009 | -.03042 | .01764 | .03771 |

x0= 135.2467 y0= 130.2567 r0= 2.10404126 std.dev.= .02214227

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 2 | 3 | 5 | 11 | 14 | 25 | 0 |

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TABLE

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .06167 | .02596 | -.00420 | -.00510 | -.03542 | -.00109 |
| 1 | -.01394 | .03383 | -.00232 | -.00270 | -.00714 | -.00275 |
| 2 | .00759 | -.02329 | -.04420 | -.02751 | -.01215 | -.00891 |
| 3 | .01659 | .00364 | -.01083 | -.00040 | -.00717 | -.00115 |
| 4 | -.02229 | .02049 | .01637 | .01515 | -.00128 | -.00489 |
| 5 | -.00033 | -.00015 | .02317 | -.04162 | -.01625 | -.00065 |
| 6 | -.02037 | -.00147 | -.00269 | -.01625 | .00472 | .00138 |
| 7 | -.02403 | -.00664 | -.00534 | .00408 | -.00646 | .00096 |
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| 9 | | -.01770 | -.01761 | | | |

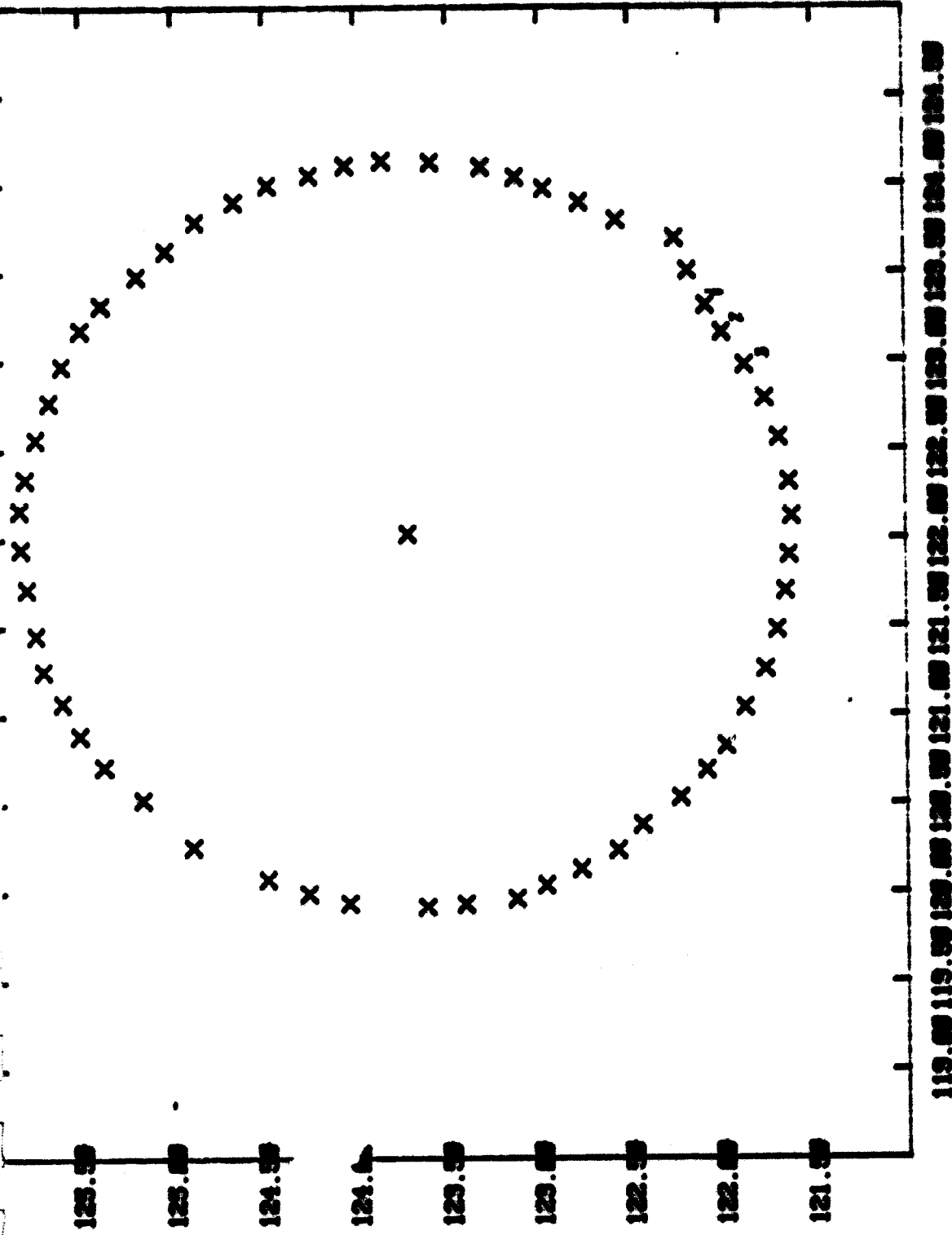
x0= 135.2510 y0= 138.2578 r0= 2.10213733 std.dev.= .01451969

HISTOGRAM DEVIATION >= e

e= .05 .04 .03 .02 .01 0.00 bad points
1 3 2 11 12 26 5

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7301-01

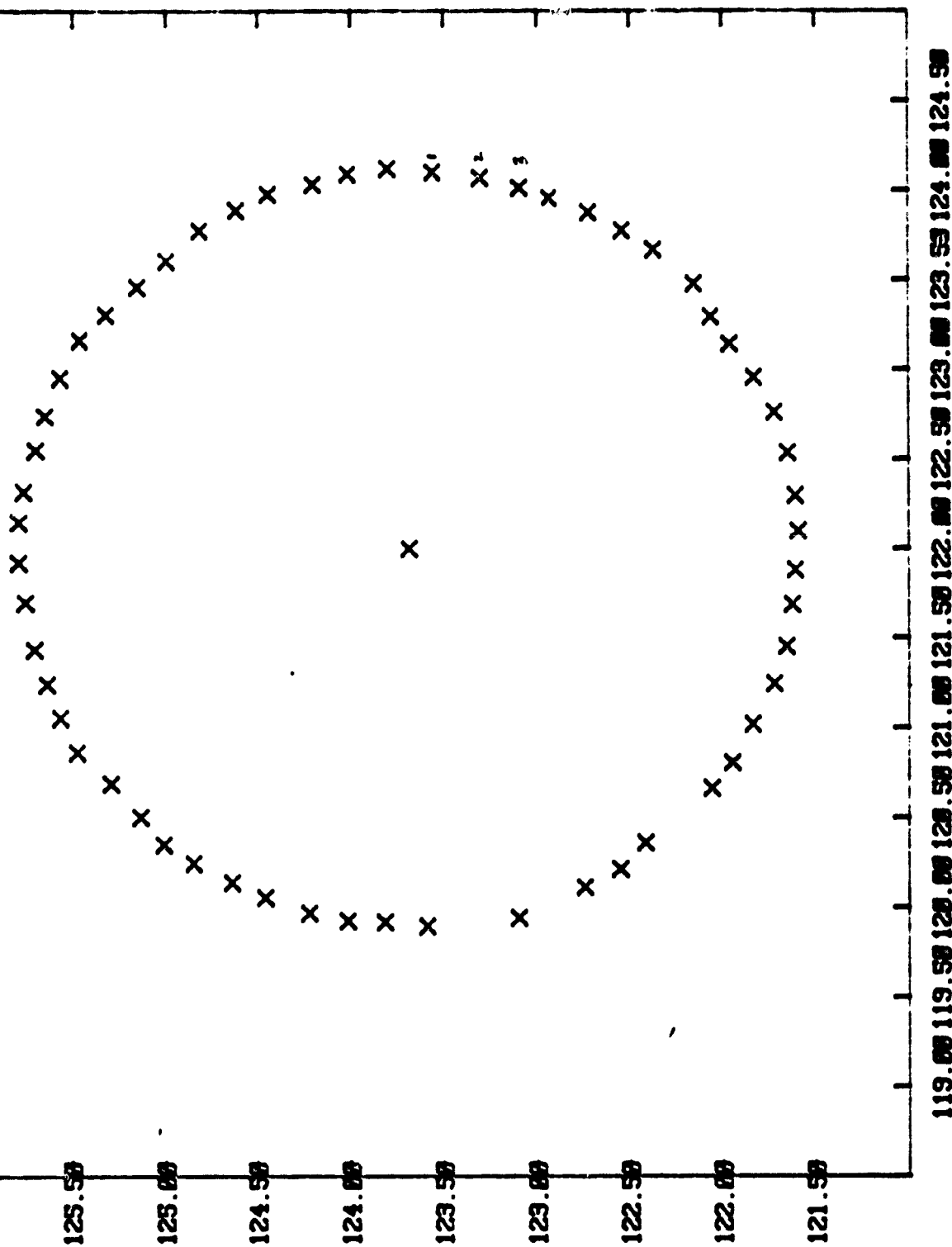


POSITION #4 S.D.= 1.405 %

29-A-00 F2.8 +.8M 2 K=.33.294.37.236 100X 0°C.

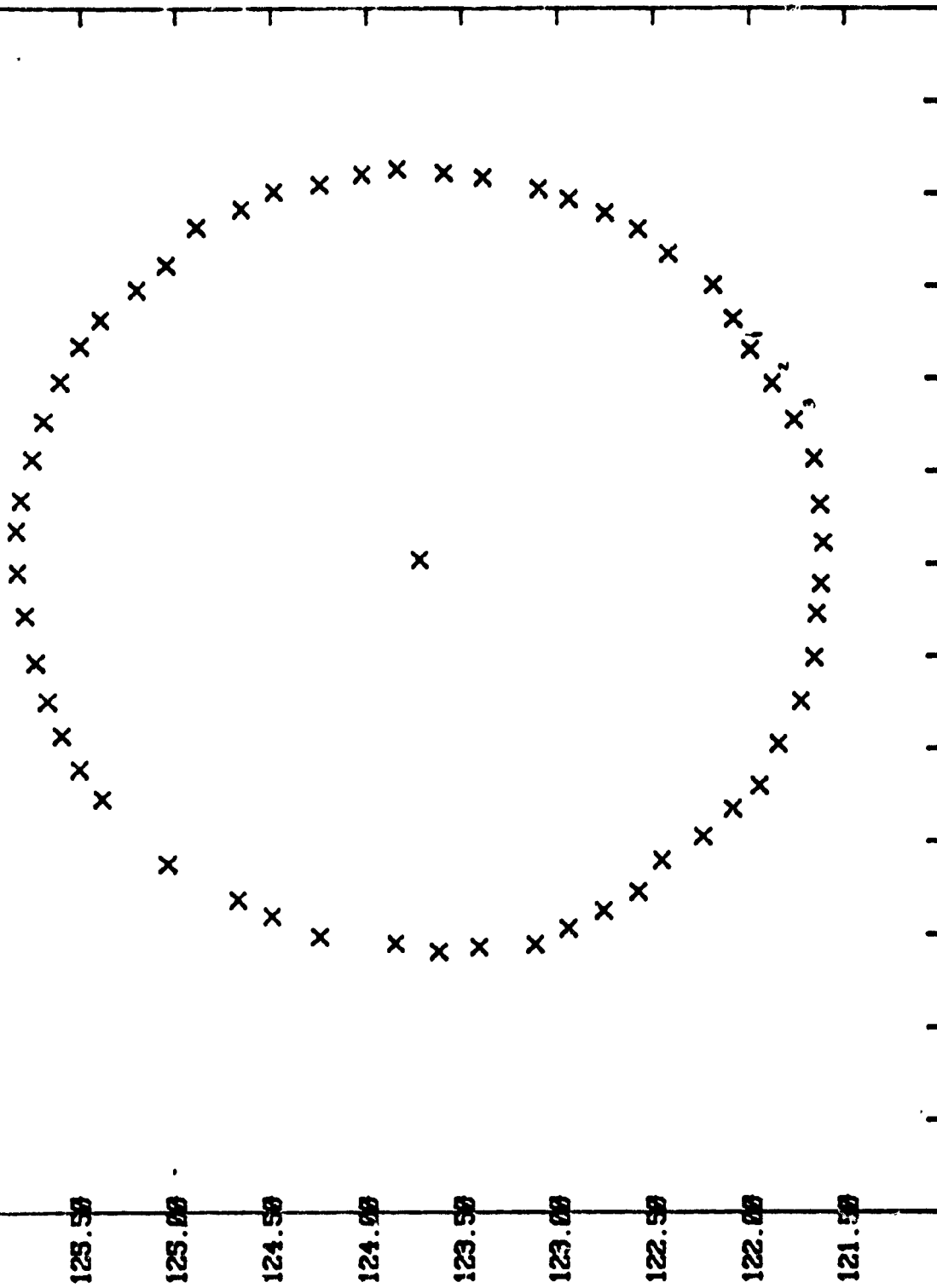
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TR81-04



POSITION #4 S.D= 1.492 %

29-A-03 F2.8 +.8M 2 K=.33.294.37.236 10% 0°C



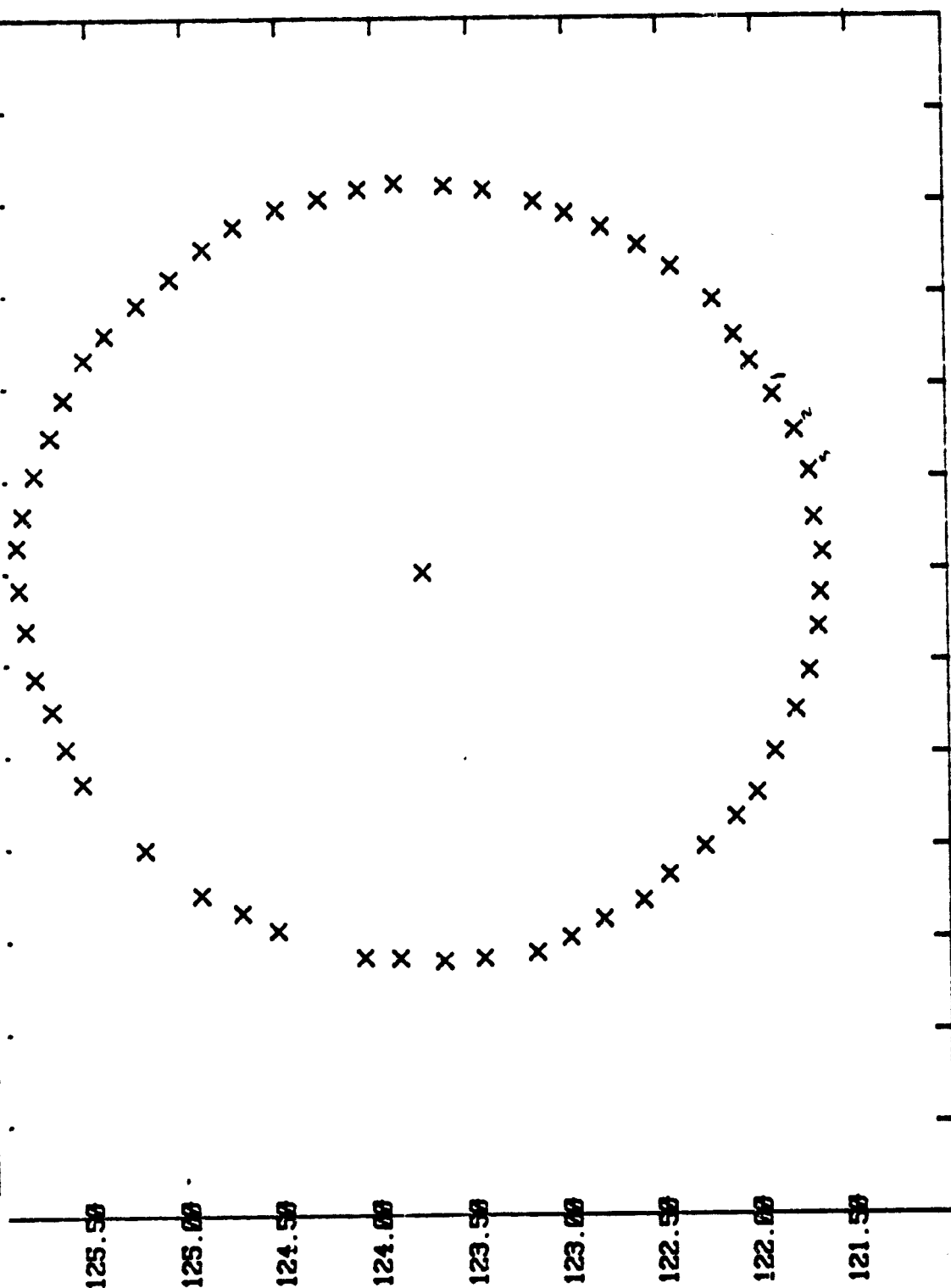
119.00 119.50 120.00 120.50 121.00 121.50 122.00 122.50 123.00 123.50 124.00 124.50

POSITION #4 S.D= 2.170 %

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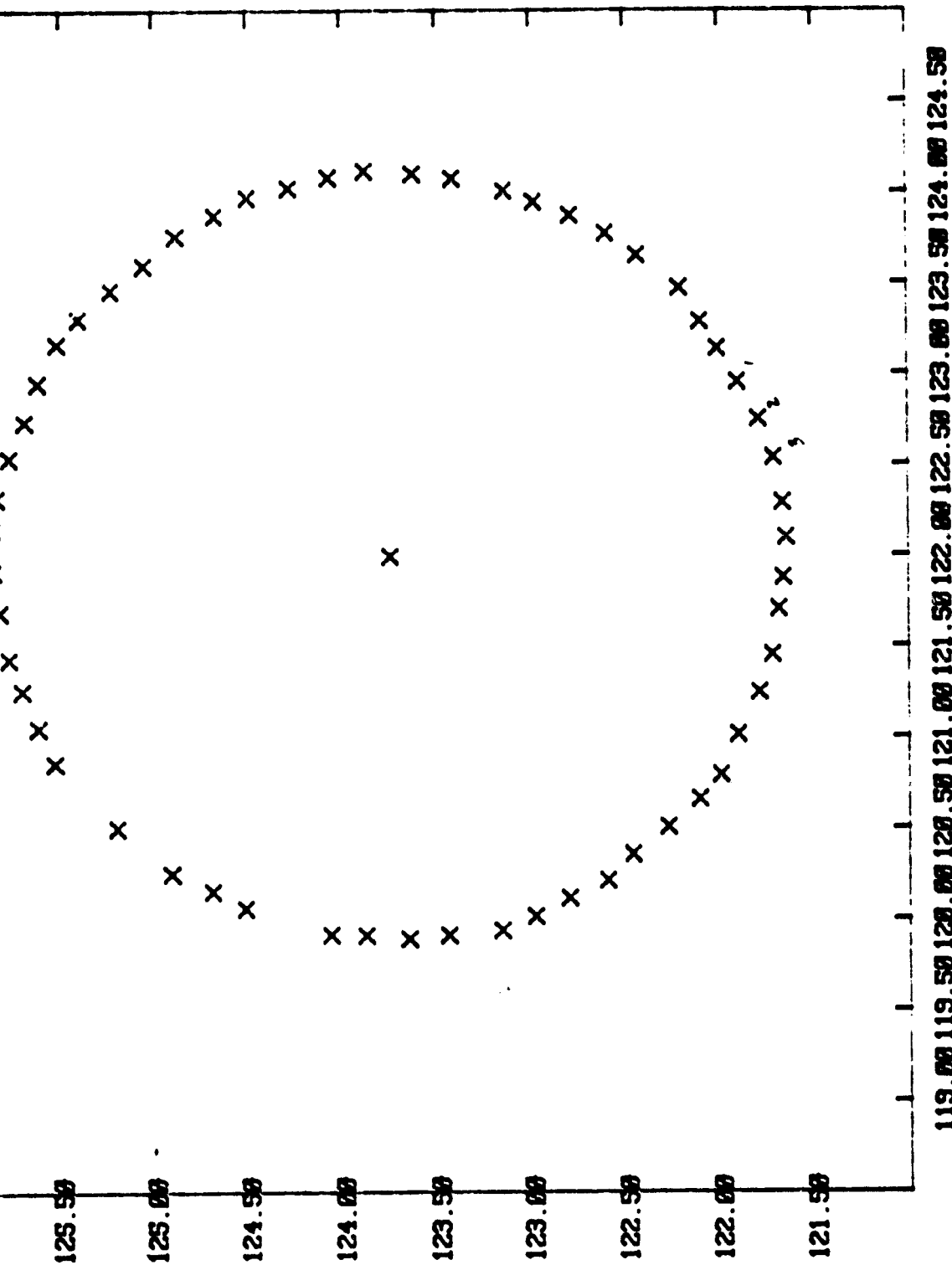
119.00 119.50 120.00 120.50 121.00 121.50 122.00 122.50 123.00 123.50 124.00 124.50

POSITION #4 S.D= 1.368 %

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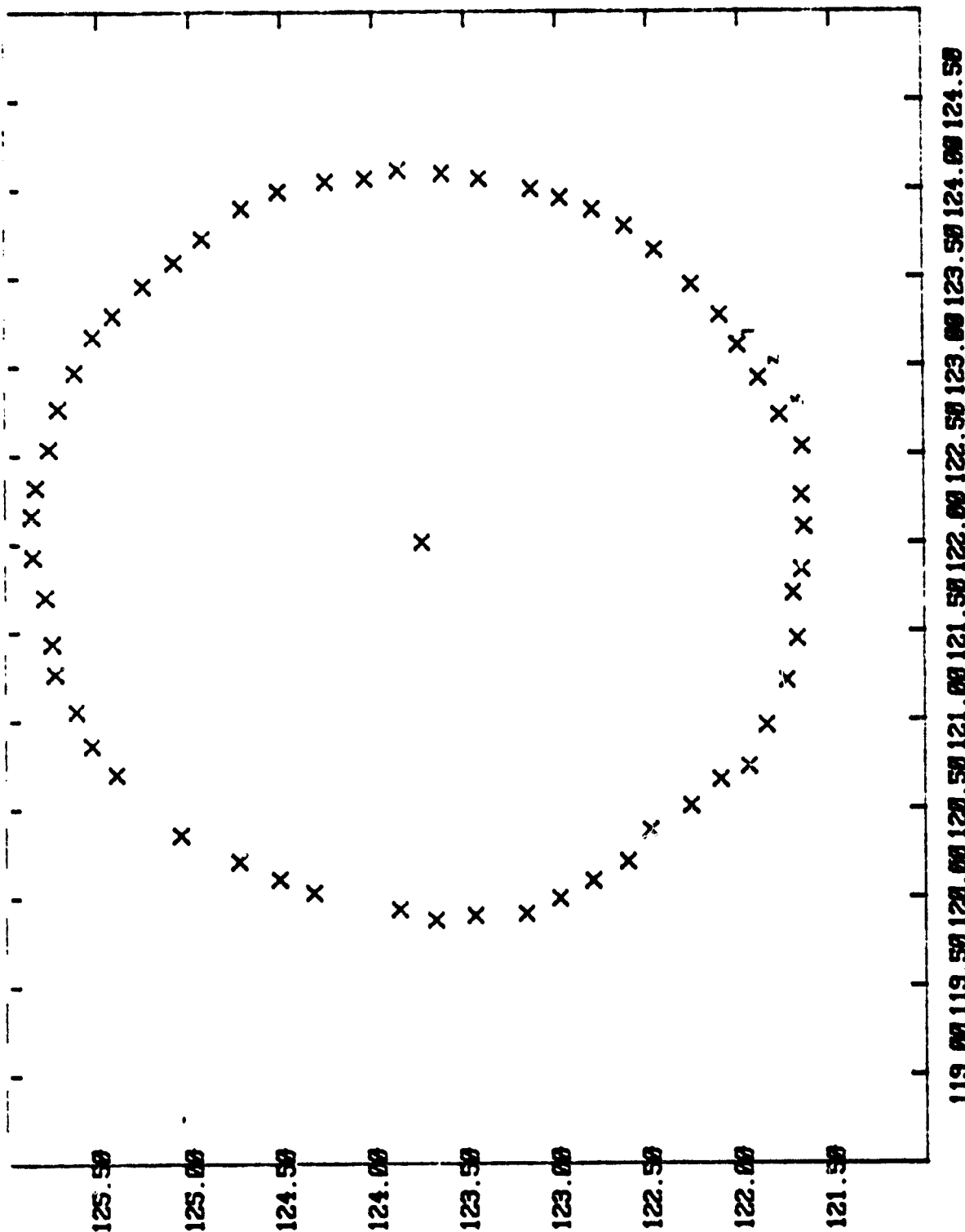


POSITION #4 S.D= 1.453 %

29-A-05 F2.8 +.8M 2 K=.33.294.37.236 10% 10°C

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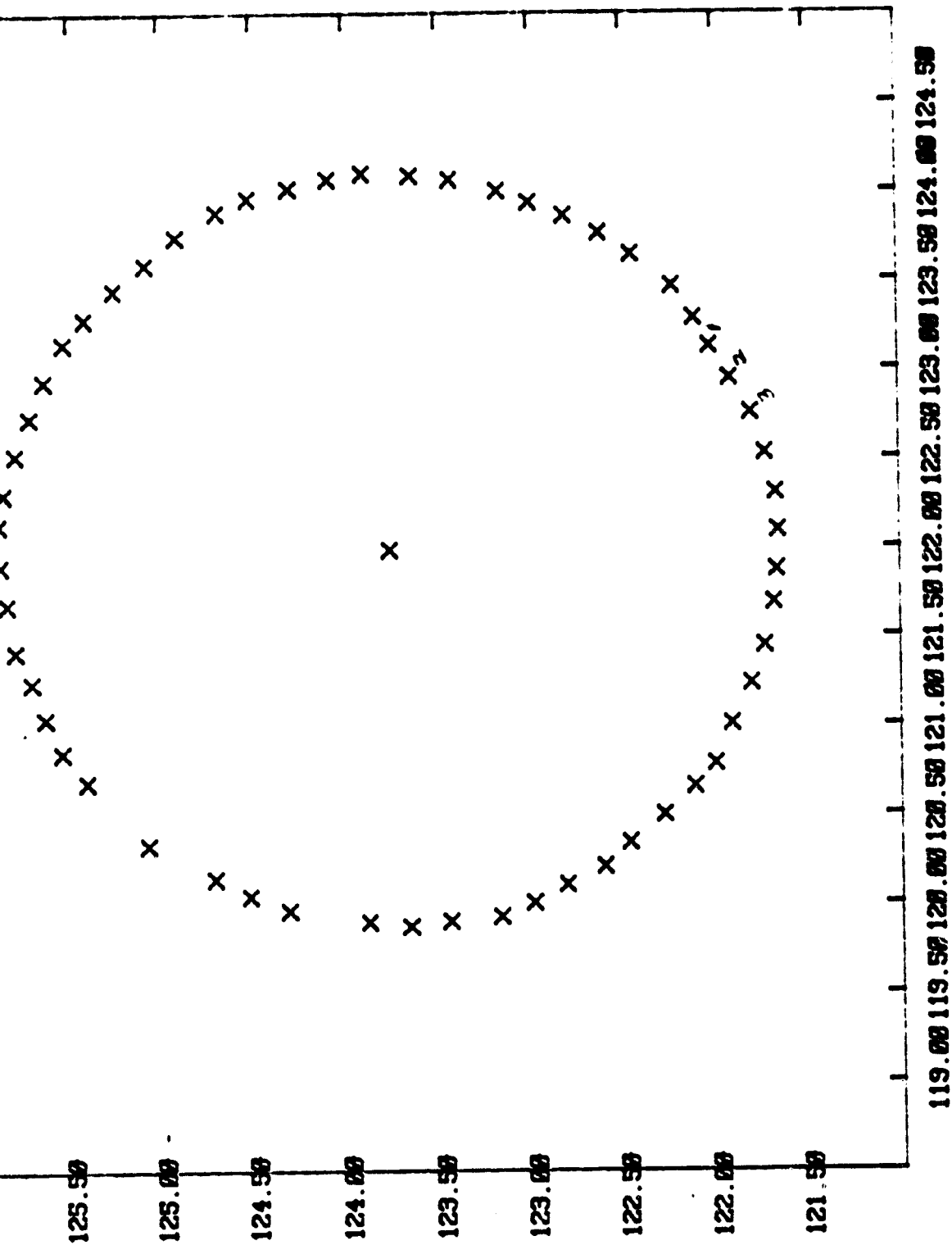
TR81-04



POSITION #4 S.D= 2.881 %

29-A-07 F2.8 +.8M 2 K=.33.294.37.236 <1% 10°C

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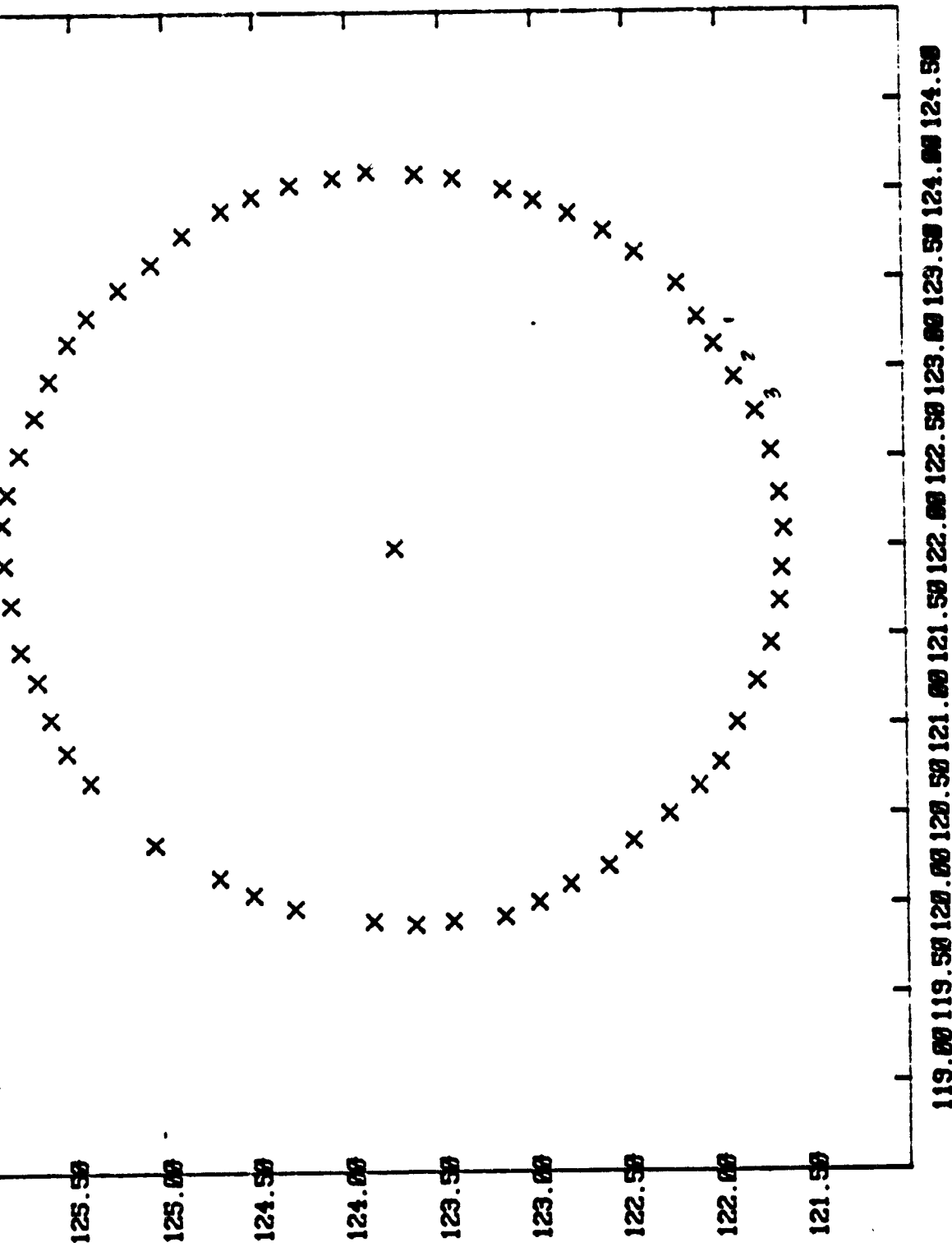


POSITION #4 S.D= 1.329 %

29-A-09 F2.8 +.8M 2 K=.33.294.37.236 100% 20°C

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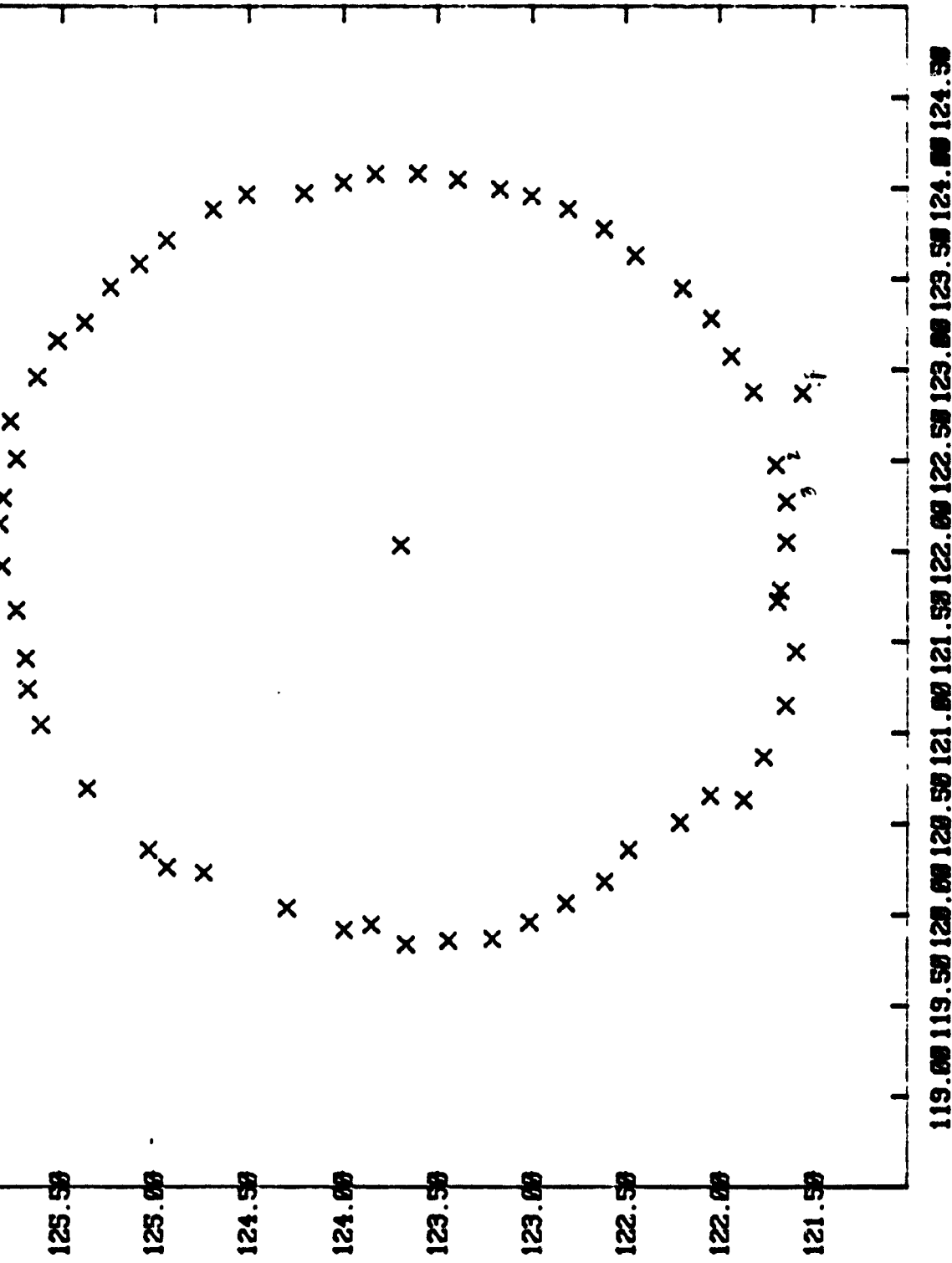


POSITION #4 S.D= 1.454 %

29-A-08 F2.8 +.8M 2 K=.33.294.37.236 10% 20° C

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TR81-04



POSITION #4 S.D= 5.196 %

29-A-11 F2.8 +.8M.2 K=.33.294.37.236 <1% 20°C

Disk 2A-A Track data file TDATA00

Position 04

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 16.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .33000 | .29400 | .37000 | .23600 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .448 | 8.201 | .7181E+05 | 1.136 | 123.5 | 122.0 | 123.3125 | 122.0817 | .1871E-02 | .8147E-03 |
| .498 | 14.412 | .7973E+05 | 1.162 | 123.0 | 122.0 | 123.1582 | 121.9930 | .1843E-02 | .1120E-02 |
| .462 | 20.766 | .7954E+05 | 1.151 | 123.0 | 122.0 | 122.9741 | 121.8716 | .1105E-02 | .1444E-02 |
| .490 | 27.014 | .8485E+05 | 1.136 | 123.0 | 122.0 | 122.7840 | 121.7637 | .2036E-02 | .2753E-02 |
| .448 | 33.292 | .7379E+05 | 1.063 | 122.5 | 122.0 | 122.5647 | 121.6901 | .2089E-02 | .1492E-02 |
| .467 | 39.597 | .8319E+05 | 1.006 | 122.5 | 121.5 | 122.3149 | 121.6372 | .1041E-02 | .3247E-03 |
| .464 | 45.846 | .7993E+05 | 1.041 | 122.0 | 121.5 | 122.1199 | 121.6238 | .1655E-02 | .8341E-03 |
| .439 | 52.132 | .8192E+05 | 1.063 | 122.0 | 121.5 | 121.9011 | 121.6347 | .1328E-02 | .1269E-02 |
| .495 | 58.427 | .8860E+05 | 1.109 | 122.0 | 121.5 | 121.6955 | 121.6568 | .2162E-02 | .1058E-02 |
| .476 | 64.668 | .7167E+05 | 1.112 | 121.5 | 122.0 | 121.4774 | 121.7038 | .5979E-03 | .1943E-02 |
| | | | | | | | | | |
| .487 | 70.902 | .8339E+05 | 1.189 | 121.0 | 122.0 | 121.2563 | 121.7662 | .2537E-02 | .3552E-02 |
| .470 | 1.859 | .8067E+05 | 1.161 | 121.0 | 122.0 | 121.0406 | 121.8792 | .7430E-03 | .1152E-02 |
| .448 | 8.237 | .7986E+05 | 1.141 | 121.0 | 122.0 | 120.8242 | 121.9841 | .1446E-02 | .1156E-02 |
| .467 | 14.402 | .6960E+05 | 1.093 | 120.5 | 122.0 | 120.6877 | 122.0906 | .7541E-03 | .1120E-02 |
| .504 | 20.777 | .7329E+05 | 1.105 | 120.5 | 122.0 | 120.5319 | 122.2397 | .2530E-02 | .2620E-02 |
| .439 | 26.990 | .4836E+05 | .910 | 120.5 | 122.5 | 120.3805 | 122.4439 | .3120E-02 | .2564E-02 |
| .467 | 33.303 | .5409E+05 | .954 | 120.0 | 122.5 | 120.2359 | 122.5790 | .1647E-02 | .1492E-02 |
| .425 | 39.562 | .6562E+05 | 1.110 | 120.0 | 123.0 | 120.1337 | 122.7840 | .1578E-02 | .1315E-02 |
| .417 | 45.860 | .7840E+05 | 1.141 | 120.0 | 123.0 | 120.0413 | 122.9774 | .1649E-02 | .1004E-02 |
| .450 | 52.128 | .8595E+05 | 1.147 | 120.0 | 123.0 | 119.9638 | 123.1395 | .1739E-02 | .9955E-03 |
| | | | | | | | | | |
| .478 | 58.426 | .9320E+05 | .991 | 120.0 | 123.5 | 119.9339 | 123.4168 | .8480E-03 | .5847E-03 |
| .414 | 64.661 | .9398E+05 | 1.013 | 120.0 | 123.5 | 119.9172 | 123.6256 | .3374E-02 | .1014E-02 |
| .526 | 70.902 | .1038E+06 | 1.181 | 120.0 | 124.0 | 119.9389 | 123.8628 | .2142E-02 | .2190E-02 |
| .540 | 1.848 | .9626E+05 | 1.210 | 120.0 | 124.0 | 119.9422 | 124.0490 | .3007E-02 | .1226E-02 |
| .459 | 8.205 | .9043E+05 | 1.155 | 120.0 | 124.0 | 119.9972 | 124.2686 | .7559E-03 | .5315E-03 |
| .425 | 14.414 | .6324E+05 | .967 | 120.0 | 124.5 | 120.0791 | 124.4920 | .2763E-02 | .1953E-02 |
| .476 | 20.787 | .4352E+05 | 1.076 | 120.0 | 125.0 | 120.1702 | 124.6790 | .3423E-02 | .3748E-02 |
| .425 | 27.002 | .4031E+05 | 1.166 | 120.0 | 125.0 | 120.2603 | 124.8989 | .1888E-02 | .6912E-03 |
| .487 | 33.288 | .3715E+05 | 1.122 | 120.5 | 125.0 | 120.3677 | 125.0470 | .1471E-02 | .1169E-02 |
| .473 | 39.567 | .4232E+05 | 1.089 | 120.5 | 125.0 | 120.5260 | 125.1738 | .9354E-03 | .1063E-02 |
| | | | | | | | | | |
| .523 | 45.843 | .7532E+05 | 1.071 | 121.0 | 125.5 | 120.7141 | 125.3310 | .1257E-02 | .2815E-02 |
| .481 | 52.134 | .7144E+05 | .999 | 121.0 | 125.5 | 120.6910 | 125.5091 | .1295E-02 | .2803E-03 |
| .439 | 58.426 | .7099E+05 | .997 | 121.0 | 125.5 | 121.0234 | 125.6012 | .1247E-02 | .2803E-03 |
| .450 | 64.667 | .9996E+05 | 1.112 | 121.0 | 125.5 | 121.1950 | 125.7456 | .1311E-02 | .2803E-03 |
| .439 | 70.891 | .7355E+05 | 1.093 | 121.5 | 126.0 | 121.4917 | 125.7456 | .7099E-03 | .2803E-02 |

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|------|--------|-----------|-------|-------|-------|----------|----------|-----------|------------|
| .501 | 1.111 | .8242E+05 | 1.149 | 122.0 | 126.0 | 121.150 | 125.711 | .1089E-02 | .1742E-02 |
| .467 | 8.206 | .8242E+05 | 1.149 | 122.0 | 126.0 | 121.9447 | 125.8178 | .1089E-02 | .1742E-02 |
| .506 | 14.418 | .8303E+05 | 1.144 | 122.0 | 126.0 | 122.1620 | 125.8352 | .1089E-02 | .1742E-02 |
| .456 | 20.771 | .6367E+05 | 1.099 | 122.5 | 126.0 | 122.3366 | 125.8041 | .9807E-03 | .17514E-02 |
| .481 | 27.019 | .7173E+05 | 1.072 | 122.5 | 126.0 | 122.5649 | 125.7455 | .6132E-03 | .1700E-02 |
| | | | | | | | | | |
| .448 | 13.295 | .9206E+05 | 1.100 | 123.0 | 126.0 | 122.7705 | 125.6718 | .1175E-02 | .1799E-02 |
| .498 | 39.592 | .7207E+05 | .991 | 123.0 | 125.5 | 122.9782 | 125.5926 | .1247E-02 | .1605E-02 |
| .478 | 45.857 | .6415E+05 | .963 | 123.0 | 125.5 | 123.1826 | 125.4956 | .1275E-02 | .1647E-02 |
| .498 | 52.123 | .5225E+05 | 1.008 | 123.5 | 125.5 | 123.3204 | 125.3836 | .8034E-03 | .1641E-02 |
| .509 | 58.433 | .4371E+05 | 1.100 | 123.5 | 125.0 | 123.4835 | 125.1927 | .1309E-02 | .1664E-02 |
| .529 | 64.650 | .4205E+05 | 1.093 | 123.5 | 125.0 | 123.6257 | 125.0365 | .8536E-03 | .1632E-02 |
| .470 | 70.898 | .5697E+05 | 1.123 | 124.0 | 125.0 | 123.7939 | 124.8705 | .1687E-02 | .1704E-02 |
| .478 | 1.858 | .6953E+05 | 1.035 | 124.0 | 124.5 | 123.9034 | 124.6563 | .8576E-02 | .16821E-02 |
| .481 | 8.213 | .6423E+05 | .973 | 124.0 | 124.5 | 123.9976 | 124.4719 | .1767E-02 | .1504E-02 |
| .518 | 14.414 | .9271E+05 | 1.153 | 124.0 | 124.0 | 124.0540 | 124.2483 | .9750E-03 | .1341E-02 |
| | | | | | | | | | |
| .478 | 20.768 | .9910E+05 | 1.173 | 124.0 | 124.0 | 124.1083 | 124.0527 | .8691E-03 | .1474E-02 |
| .546 | 27.012 | .1048E+06 | 1.146 | 124.0 | 124.0 | 124.1332 | 123.8506 | .1894E-02 | .12881E-02 |
| .403 | 33.300 | .9121E+05 | .978 | 124.0 | 123.5 | 124.1235 | 123.5866 | .1334E-02 | .9253E-03 |
| .442 | 39.582 | .9127E+05 | 1.096 | 124.0 | 123.0 | 124.0981 | 123.3469 | .2190E-02 | .1223E-01 |
| .422 | 45.804 | .8546E+05 | 1.160 | 124.0 | 123.0 | 124.0408 | 123.1280 | .5966E-03 | .1493E-02 |
| .445 | 52.100 | .7925E+05 | 1.163 | 124.0 | 123.0 | 123.9760 | 122.9731 | .1275E-02 | .1704E-02 |
| .394 | 58.413 | .6682E+05 | 1.097 | 124.0 | 123.0 | 123.8962 | 122.7728 | .9019E-03 | .1767E-02 |
| .495 | 64.670 | .4670E+05 | .934 | 124.0 | 122.5 | 123.7957 | 122.5702 | .1106E-02 | .1754E-03 |
| .422 | 70.898 | .1278E+06 | 1.163 | 123.5 | 122.5 | 123.6976 | 122.6044 | .1916E-01 | .1338E+00 |
| .425 | 1.842 | .7619E+05 | 1.125 | 123.5 | 122.0 | 123.5065 | 122.1823 | .1073E-02 | .17097E-03 |

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| | delta rt | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | -.00923 | -.02747 | -.01561 | .00453 | .00607 | .00723 |
| 1 | .00282 | -.00724 | -.00751 | -.00837 | .00108 | .01171 |
| 2 | .01044 | .00696 | .00076 | -.02117 | .01852 | .00606 |
| 3 | .01328 | .03596 | .00672 | .00320 | -.01634 | .00096 |
| 4 | -.00728 | -.01483 | -.02041 | .01368 | .01454 | .02027 |
| 5 | .00767 | .01016 | .00042 | -.03260 | .00053 | -.00383 |
| 6 | .00578 | .01478 | .00295 | -.00728 | -.01342 | .00377 |
| 7 | .01857 | .00723 | -.02672 | -.02613 | .01226 | .00210 |
| 8 | .01471 | .00109 | .01467 | .01770 | .00870 | .01294 |
| 9 | .00779 | -.00385 | .00453 | .01862 | -.08632 | .04254 |

$\mu_0 = 122.0186$ $\nu_0 = 123.7248$ $\rho_0 = 2.10059381$ $\text{std.dev.} = .01834827$

HISTOGRAM DEVIATION $\geq e$

| $e =$ | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|-------|-----|-----|-----|-----|-----|------|------------|
| | 1 | 1 | 2 | 6 | 19 | 31 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | Delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | -.01249 | -.03064 | -.01866 | .00161 | .00380 | .00530 |
| 1 | .00038 | -.00952 | -.00962 | -.01030 | .00066 | -.01346 |
| 2 | .00907 | .00572 | -.00032 | -.02207 | .01774 | .00542 |
| 3 | .01275 | .03552 | .00638 | .00293 | -.01656 | .00077 |
| 4 | -.00746 | -.01501 | -.02061 | .01344 | .01426 | -.02062 |
| 5 | .00720 | .00958 | -.00027 | | -.00041 | -.00495 |
| 6 | .00448 | .01331 | .00134 | -.00907 | -.01539 | .00162 |
| 7 | .01624 | .00477 | -.02936 | -.02892 | .00931 | -.00099 |
| 8 | .01152 | -.00221 | .01129 | .01425 | .00520 | |
| 9 | .00424 | -.00740 | .00100 | .01513 | | .02919 |

r0= 122.0202 r0= 123.7243 r0= 2.10245609 std.dev.= .01405497

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 3 | 5 | 17 | 32 | 3 |

ORIGINAL PAGE IS
OF POOR QUALITY

Disk 29-A track data file TDATA03

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 64.0 |
| NR001 | | | |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .2298E+06 | .9190E+05 | .7352E+06 |
| Constant: | .33000 | .29400 | .37000 |
| Displacement: | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dart current | star mag. | reference | | position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .347 | 33.270 | .2010E+05 | 2.762 | 124.0 | 123.5 | 124.1016 | 123.5606 | .1514E-02 | .4629E-03 |
| .324 | 39.531 | .1964E+05 | 2.902 | 124.0 | 123.0 | 124.0685 | 123.3023 | .7337E-03 | .5561E-03 |
| .349 | 45.807 | .1830E+05 | 2.932 | 124.0 | 123.0 | 124.0128 | 123.0943 | .1832E-02 | .6274E-03 |
| .307 | 52.132 | .1700E+05 | 2.929 | 124.0 | 123.0 | 123.9536 | 122.9367 | .1244E-02 | .3567E-03 |
| .299 | 58.378 | .1422E+05 | 2.860 | 124.0 | 123.0 | 123.8739 | 122.7216 | .1417E-02 | .1112E-02 |
| .310 | 64.643 | .1003E+05 | 2.717 | 124.0 | 122.5 | 123.7745 | 122.5419 | .1040E-02 | .1647E-02 |
| .366 | 70.895 | .2917E+05 | 2.967 | 123.5 | 122.0 | 123.6589 | 122.4584 | .1941E-01 | .2708E+00 |
| .318 | 1.827 | .1706E+05 | 2.913 | 123.5 | 122.0 | 123.4776 | 122.1540 | .8773E-03 | .1410E-02 |
| .321 | 8.180 | .1621E+05 | 2.922 | 123.5 | 122.0 | 123.2909 | 122.0594 | .1099E-02 | .4240E-03 |
| .389 | 14.394 | .1832E+05 | 2.935 | 123.0 | 122.0 | 123.1379 | 121.9610 | .1666E-02 | .6695E-03 |
| | | | | | | | | | |
| .363 | 20.750 | .1891E+05 | 2.930 | 123.0 | 122.0 | 122.9557 | 121.8336 | .1153E-02 | .1617E-02 |
| .318 | 26.984 | .2029E+05 | 2.921 | 123.0 | 122.0 | 122.7588 | 121.7248 | .2767E-02 | .1657E-02 |
| .361 | 33.271 | .1808E+05 | 2.813 | 122.5 | 121.5 | 122.5327 | 121.6526 | .7160E-03 | .2747E-03 |
| .310 | 39.545 | .1715E+05 | 2.796 | 122.5 | 121.5 | 122.2934 | 121.6114 | .1166E-02 | .9899E-03 |
| .318 | 45.834 | .1691E+05 | 2.821 | 122.0 | 121.5 | 122.0957 | 121.5967 | .1531E-02 | .1166E-02 |
| .341 | 52.105 | .1779E+05 | 2.844 | 122.0 | 121.5 | 121.8772 | 121.6109 | .1609E-02 | .4893E-03 |
| .352 | 58.388 | .1631E+05 | 2.830 | 121.5 | 121.5 | 121.6860 | 121.6260 | .1431E-02 | .5863E-03 |
| .383 | 64.635 | .1614E+05 | 2.845 | 121.5 | 121.5 | 121.4535 | 121.6575 | .7816E-03 | .9767E-03 |
| .352 | 70.902 | .1957E+05 | 2.967 | 121.0 | 122.0 | 121.2447 | 121.7223 | .1477E-02 | .1268E-02 |
| .380 | 1.816 | .1868E+05 | 2.946 | 121.0 | 122.0 | 121.0196 | 121.8390 | .1676E-02 | .6050E-03 |
| | | | | | | | | | |
| .405 | 8.158 | .1857E+05 | 2.930 | 121.0 | 122.0 | 120.8051 | 121.9480 | .1172E-02 | .1845E-02 |
| .372 | 14.402 | .1589E+05 | 2.882 | 120.5 | 122.0 | 120.6620 | 122.0577 | .9071E-03 | .5917E-03 |
| .358 | 20.723 | .1660E+05 | 2.891 | 120.5 | 122.0 | 120.5074 | 122.2043 | .4149E-03 | .1176E-02 |
| .318 | 27.000 | .1046E+05 | 2.720 | 120.5 | 122.5 | 120.3614 | 122.4161 | .7699E-03 | .6529E-03 |
| .302 | 33.268 | .1153E+05 | 2.724 | 120.0 | 122.5 | 120.2152 | 122.5525 | .1927E-03 | .1123E-02 |
| .313 | 39.551 | .1368E+05 | 2.877 | 120.0 | 123.0 | 120.1149 | 122.7413 | .6189E-03 | .1563E-02 |
| .299 | 45.825 | .1674E+05 | 2.909 | 120.0 | 123.0 | 120.0257 | 122.9407 | .9987E-03 | .2894E-03 |
| .324 | 52.121 | .1840E+05 | 2.917 | 120.0 | 123.0 | 119.9407 | 123.0987 | .1601E-02 | .1753E-02 |
| .363 | 58.406 | .2217E+05 | 2.809 | 120.0 | 123.5 | 119.9165 | 123.3818 | .6874E-02 | .5367E-02 |
| .321 | 64.635 | .2071E+05 | 2.786 | 120.0 | 123.5 | 119.8962 | 123.5920 | .1654E-02 | .1007E-02 |
| | | | | | | | | | |
| .436 | 70.888 | .2409E+05 | 2.953 | 120.0 | 124.0 | 119.9176 | 123.8186 | .4329E-03 | .1477E-02 |
| .417 | 1.831 | .2190E+05 | 2.984 | 120.0 | 124.0 | 119.9241 | 124.0191 | .7759E-03 | .2953E-03 |
| .400 | 8.202 | .2072E+05 | 2.942 | 120.0 | 124.0 | 119.9484 | 124.1265 | .6649E-03 | .1925E-02 |
| .397 | 14.401 | .1374E+05 | 2.764 | 120.0 | 124.5 | 120.0764 | 124.4628 | .1061E-03 | .5731E-03 |
| .363 | 20.738 | .1322E+05 | 2.810 | 120.0 | 124.5 | 120.1404 | 124.6424 | .1111E-03 | .5907E-03 |

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| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .336 | 33.283 | .9275E+04 | 2.913 | 120.5 | 125.0 | 120.3493 | 125.0149 | .1311E-02 | .7939E-03 |
| .330 | 39.567 | .1003E+05 | 2.882 | 120.5 | 125.0 | 120.5041 | 125.1360 | .1081E-02 | .1170E-02 |
| .363 | 45.865 | .1225E+05 | 2.883 | 120.5 | 125.0 | 120.6898 | 125.2979 | .1623E-02 | .1075E-02 |
| .389 | 52.106 | .1588E+05 | 2.804 | 121.0 | 125.5 | 120.8635 | 125.4766 | .9216E-03 | .3969E-03 |
| .369 | 58.412 | .1606E+05 | 2.785 | 121.0 | 125.5 | 121.0547 | 125.5671 | .1054E-02 | .4619E-03 |
| .369 | 64.654 | .1555E+05 | 2.836 | 121.0 | 125.5 | 121.2408 | 125.6392 | .9495E-03 | .5540E-03 |
| .361 | 70.888 | .1748E+05 | 2.876 | 121.5 | 126.0 | 121.4355 | 125.7037 | .9320E-03 | .8924E-03 |
| .318 | 1.813 | .1786E+05 | 2.891 | 121.5 | 126.0 | 121.6988 | 125.7500 | .1585E-02 | .1434E-02 |
| .391 | 8.165 | .2002E+05 | 2.931 | 122.0 | 126.0 | 121.9220 | 125.7847 | .1276E-02 | .1517E-02 |
| .358 | 14.415 | .1975E+05 | 2.925 | 122.0 | 126.0 | 122.1497 | 125.7844 | .2143E-02 | .1543E-02 |
| .425 | 20.758 | .1681E+05 | 2.895 | 122.5 | 126.0 | 122.3186 | 125.7607 | .1231E-02 | .2043E-02 |
| .400 | 26.995 | .1794E+05 | 2.871 | 122.5 | 126.0 | 122.5444 | 125.6998 | .8150E-03 | .1133E-02 |
| .397 | 33.279 | .1783E+05 | 2.835 | 123.0 | 125.5 | 122.7395 | 125.6528 | .6755E-03 | .8058E-03 |
| .358 | 39.567 | .1668E+05 | 2.781 | 123.0 | 125.5 | 122.9513 | 125.5692 | .1707E-02 | .6111E-03 |
| .400 | 45.842 | .1458E+05 | 2.766 | 123.0 | 125.5 | 123.1609 | 125.4646 | .1961E-02 | .7004E-03 |
| .408 | 52.114 | .1170E+05 | 2.890 | 123.5 | 125.0 | 123.3051 | 125.3203 | .1388E-02 | .9277E-02 |
| .366 | 58.385 | .9972E+04 | 2.887 | 123.5 | 125.0 | 123.4617 | 125.1522 | .1230E-02 | .1481E-02 |
| .363 | 64.648 | .1001E+05 | 2.875 | 123.5 | 125.0 | 123.6041 | 124.9990 | .7595E-03 | .5165E-03 |
| .414 | 70.891 | .1315E+05 | 2.896 | 124.0 | 125.0 | 123.7738 | 124.8213 | .1042E-02 | .4168E-03 |
| .358 | 1.838 | .1364E+05 | 2.791 | 124.0 | 124.5 | 123.8877 | 124.6176 | .1626E-02 | .9780E-03 |
| .389 | 8.196 | .1368E+05 | 2.771 | 124.0 | 124.5 | 123.9771 | 124.4444 | .8003E-03 | .6670E-03 |
| .414 | 14.405 | .2121E+05 | 2.935 | 124.0 | 124.0 | 124.0323 | 124.2087 | .1774E-02 | .1624E-02 |
| .434 | 20.758 | .2249E+05 | 2.947 | 124.0 | 124.0 | 124.0914 | 124.0177 | .1057E-02 | .1111E-02 |
| .428 | 27.016 | .2390E+05 | 2.927 | 124.0 | 124.0 | 124.1195 | 123.8018 | .1634E-02 | .1110E-02 |

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| | delta r1 | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | .00762 | .00618 | .00048 | -.00508 | .01014 | .01410 |
| 1 | -.03349 | .03125 | -.02067 | -.03080 | -.01298 | .00547 |
| 2 | .00449 | -.00241 | -.00632 | -.01226 | -.01425 | .00252 |
| 3 | .00545 | -.00759 | .01018 | .00837 | .00361 | -.02647 |
| 4 | .01452 | .00855 | .01011 | .04108 | .00502 | .00514 |
| 5 | -.01427 | .00131 | .00117 | -.00835 | -.01017 | .00214 |
| 6 | .01776 | -.01804 | -.02806 | .01951 | .00397 | -.00562 |
| 7 | -.00591 | -.01509 | -.00066 | .00312 | -.00154 | .01274 |
| 8 | .00112 | .00986 | .02417 | .00805 | -.02898 | -.02616 |
| 9 | .00712 | .00641 | .01908 | .00012 | .01246 | .02472 |

mu = 121.9985 sigma = 123.6875 rho = 2.09931850 std.dev. = .01544527

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 3 | 7 | 17 | 32 | 0 |

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OF POOR QUALITY

| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | .00607 | .00456 | -.00119 | -.00677 | .00842 | .01236 |
| 1 | | .02952 | -.02237 | -.03247 | -.01460 | .00121 |
| 2 | .00301 | -.00380 | -.00763 | -.02047 | -.01538 | .00152 |
| 3 | .00456 | -.00834 | .00956 | .00786 | .00340 | -.02674 |
| 4 | .01435 | .00849 | .01015 | .04121 | .00526 | .00546 |
| 5 | -.01388 | .00175 | .00167 | -.00782 | -.00261 | .00771 |
| 6 | .01833 | -.01748 | -.02752 | .02000 | .00441 | -.00538 |
| 7 | -.00558 | -.01486 | -.00053 | .00315 | -.00158 | -.01321 |
| 8 | .00085 | .00247 | .02365 | -.00868 | -.02973 | -.02703 |
| 9 | .00612 | .00529 | .01787 | -.00113 | .01807 | .01325 |

$\mu_0 = 121.9995$ $\mu_0 = 123.6168$ $\sigma_0 = 2.09989691$ std. dev. = .01492262

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 1 | 10 | 12 | 35 | 1 |

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Doc 24-A Track data file TD01A04

NR001: Coarse Fine track
 1.0 1.0 1.0
 Integration delay: .1140E+00 .4564E+00 .7274E+00
 Thresholds: .1832E+00 .9120E+05 .7352E+00

Constants: .33000 .29400 .37000 .23600
 Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .464 | 14.404 | .134 E+05 | 6.157 | 123.0 | 122.0 | 123.1542 | 121.9920 | .3802E-02 | .2188E-02 |
| .453 | 20.769 | .1343E+05 | 6.154 | 123.0 | 122.0 | 122.9742 | 121.8846 | .1952E-02 | .4614E-02 |
| .470 | 27.009 | .1353E+05 | 6.150 | 123.0 | 122.0 | 122.7741 | 121.7702 | .4875E-02 | .4052E-02 |
| .459 | 33.286 | .1128E+05 | 6.121 | 122.5 | 122.0 | 122.5680 | 121.6649 | .3705E-02 | .2477E-02 |
| .490 | 39.588 | .1123E+05 | 6.055 | 122.5 | 121.5 | 122.3159 | 121.6369 | .2483E-02 | .2113E-02 |
| .453 | 45.849 | .1121E+05 | 6.050 | 122.0 | 121.5 | 122.1109 | 121.6201 | .2115E-02 | .2654E-02 |
| .462 | 52.127 | .1123E+05 | 6.065 | 122.0 | 121.5 | 121.8913 | 121.6328 | .1074E-02 | .1641E-02 |
| .408 | 58.403 | .1108E+05 | 6.081 | 121.5 | 121.5 | 121.7113 | 121.6545 | .2054E-01 | .2264E-02 |
| .439 | 64.661 | .1142E+05 | 6.169 | 121.5 | 122.0 | 121.4933 | 121.6625 | .1772E-01 | .4463E-01 |
| .425 | 70.873 | .1118E+05 | 6.183 | 121.0 | 122.0 | 121.2563 | 121.7388 | .3554E-02 | .5894E-02 |
| .442 | 1.827 | .1112E+05 | 6.133 | 121.0 | 122.0 | 121.0278 | 121.8793 | .3464E-02 | .2513E-02 |
| .478 | 8.189 | .1114E+05 | 6.108 | 121.0 | 122.0 | 120.8026 | 121.9579 | .2918E-02 | .3663E-02 |
| .467 | 14.394 | .1341E+05 | 6.061 | 120.5 | 122.0 | 120.6795 | 122.0959 | .1798E-02 | .4843E-02 |
| .476 | 20.774 | .1346E+05 | 6.086 | 120.5 | 122.0 | 120.5289 | 122.2490 | .1555E-02 | .4210E-02 |
| .422 | 26.988 | .1292E+05 | 5.878 | 120.5 | 122.5 | 120.4000 | 122.4651 | .2303E-02 | .1413E-02 |
| .386 | 33.267 | .1303E+05 | 5.911 | 120.0 | 122.5 | 120.2306 | 122.5884 | .2123E-02 | .1995E-02 |
| .386 | 39.556 | .1353E+05 | 6.062 | 120.0 | 123.0 | 120.1308 | 122.7704 | .4137E-02 | .1572E-02 |
| .394 | 45.839 | .1371E+05 | 6.083 | 120.0 | 123.0 | 120.0355 | 122.9528 | .3112E-02 | .2441E-02 |
| .377 | 52.140 | .1380E+05 | 6.090 | 120.0 | 123.0 | 119.9486 | 123.1229 | .3447E-02 | .2743E-02 |
| .450 | 58.405 | .1402E+05 | 5.991 | 120.0 | 123.5 | 119.9348 | 123.4203 | .1002E-01 | .6353E-02 |
| .355 | 64.657 | .1392E+05 | 6.007 | 120.0 | 123.5 | 119.9101 | 123.6769 | .3094E-02 | .2181E-02 |
| .529 | 70.895 | .1417E+05 | 6.131 | 120.0 | 124.0 | 119.9529 | 123.8512 | .3098E-02 | .5504E-02 |
| .526 | 1.823 | .1409E+05 | 6.139 | 120.0 | 124.0 | 119.9483 | 124.0280 | .2679E-02 | .2254E-02 |
| .473 | 8.209 | .1403E+05 | 6.093 | 120.0 | 124.0 | 119.9890 | 124.2477 | .2876E-02 | .3201E-02 |
| .459 | 14.423 | .1364E+05 | 5.954 | 120.0 | 124.5 | 120.1021 | 124.4975 | .1739E-02 | .1477E-02 |
| .448 | 20.753 | .1360E+05 | 6.036 | 120.0 | 124.5 | 120.1885 | 124.6818 | .2306E-02 | .2011E-02 |
| .464 | 27.012 | .1328E+05 | 6.075 | 120.5 | 125.0 | 120.2754 | 124.9127 | .1740E-01 | .1531E-02 |
| .481 | 33.284 | .1321E+05 | 6.051 | 120.5 | 125.0 | 120.3793 | 125.0432 | .9953E-03 | .3100E-02 |
| .397 | 39.542 | .1328E+05 | 6.034 | 120.5 | 125.0 | 120.5294 | 125.1665 | .1291E-02 | .3892E-02 |
| .476 | 45.846 | .1306E+05 | 5.997 | 120.5 | 125.5 | 120.7162 | 125.3043 | .2723E-02 | .1173E-01 |
| .428 | 52.128 | .1190E+05 | 5.964 | 121.0 | 125.5 | 120.8894 | 125.5020 | .1301E-02 | .2451E-02 |
| .405 | 58.493 | .1024E+05 | 5.960 | 121.0 | 125.5 | 121.0718 | 125.5945 | .9323E-03 | .1710E-02 |
| .408 | 64.664 | .1093E+05 | 6.035 | 121.0 | 125.5 | 121.2575 | 125.7676 | .1019E-02 | .1531E-02 |
| .425 | 70.823 | .1121E+05 | 6.098 | 121.5 | 126.0 | 121.4375 | 125.9557 | .2053E-02 | .2529E-01 |
| .425 | 1.831 | .1122E+05 | 6.098 | 121.5 | 126.0 | 121.6207 | 126.2738 | .3041E-02 | .2561E-02 |

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| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|------------|
| .500 | 8.000 | .1114E+00 | 6.000 | 122.0 | 124.0 | 122.517 | 125.800 | .1114E+00 | 6.000 |
| .464 | 14.401 | .1142E+05 | 6.095 | 122.0 | 126.0 | 122.1780 | 125.8059 | .1142E+02 | 6.097E-02 |
| .439 | 20.738 | .1114E+05 | 6.084 | 122.5 | 126.0 | 122.3439 | 125.8007 | .1114E+02 | 6.084E-02 |
| .439 | 26.999 | .1122E+05 | 6.064 | 122.5 | 126.0 | 122.5654 | 125.7431 | .1122E+02 | 6.043E-02 |
| .419 | 33.281 | .1326E+05 | 6.021 | 123.0 | 125.5 | 122.7702 | 125.6948 | .1326E+02 | 6.026E-02 |
| | | | | | | | | | |
| .453 | 39.591 | .1317E+05 | 5.955 | 123.0 | 125.5 | 122.9932 | 125.6033 | .1317E+02 | 6.031E-02 |
| .453 | 45.844 | .1304E+05 | 5.924 | 123.0 | 125.5 | 123.1797 | 125.5040 | .1304E+02 | 6.016E-02 |
| .442 | 52.123 | .1255E+05 | 5.914 | 123.5 | 125.5 | 123.3184 | 125.3942 | .1255E+02 | 6.045E-02 |
| .439 | 58.410 | .1242E+05 | 6.028 | 123.5 | 125.0 | 123.4807 | 125.1930 | .1242E+02 | 6.7597E-02 |
| .428 | 64.640 | .1244E+05 | 6.012 | 123.5 | 125.0 | 123.6126 | 125.0461 | .1244E+02 | 6.627E-02 |
| .456 | 70.888 | .1333E+05 | 6.024 | 124.0 | 125.0 | 123.8182 | 124.8912 | .1333E+02 | 6.364E-02 |
| .442 | 1.819 | .1367E+05 | 6.003 | 124.0 | 124.5 | 123.9133 | 124.6637 | .1367E+01 | 6.1650E-01 |
| .506 | 8.191 | .1349E+05 | 5.929 | 124.0 | 124.5 | 124.0090 | 124.4831 | .1349E+02 | 6.0759E-02 |
| .490 | 14.406 | .1455E+05 | 6.124 | 124.0 | 124.0 | 124.0517 | 124.2492 | .1455E+01 | 6.3652E-01 |
| .551 | 20.766 | .1433E+05 | 6.107 | 124.0 | 124.0 | 124.1030 | 124.0260 | .1433E+02 | 6.1024E-02 |
| | | | | | | | | | |
| .504 | 27.010 | .1440E+05 | 6.096 | 124.0 | 124.0 | 124.1332 | 123.8346 | .1440E+02 | 6.0595E-02 |
| .414 | 33.297 | .1394E+05 | 5.945 | 124.0 | 123.5 | 124.1139 | 123.5915 | .1394E+02 | 6.050E-02 |
| .347 | 39.586 | .1392E+05 | 5.941 | 124.0 | 123.5 | 124.0873 | 123.3934 | .1392E+02 | 6.1489E-02 |
| .434 | 45.885 | .1387E+05 | 6.070 | 124.0 | 123.0 | 124.0255 | 123.0982 | .1387E+02 | 6.2920E-02 |
| .414 | 52.132 | .1381E+05 | 6.075 | 124.0 | 123.0 | 123.9716 | 122.9426 | .1381E+02 | 6.2805E-02 |
| .366 | 58.434 | .1363E+05 | 6.021 | 124.0 | 123.0 | 123.8970 | 122.7535 | .1363E+02 | 6.4479E-02 |
| .400 | 64.671 | .1326E+05 | 5.877 | 124.0 | 122.5 | 123.8078 | 122.5822 | .1326E+01 | 6.6230E-02 |
| .383 | 70.905 | .1240E+05 | 5.866 | 123.5 | 122.5 | 123.6749 | 122.4226 | .1240E+02 | 6.1253E-02 |
| .439 | 1.859 | .1299E+05 | 6.094 | 123.5 | 122.0 | 123.5054 | 122.1904 | .1299E+02 | 6.3987E-02 |
| .506 | 8.232 | .1290E+05 | 6.095 | 123.5 | 122.0 | 123.3200 | 122.0868 | .1290E+02 | 6.3699E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

delta ri

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .04366 | -.03692 | -.01479 | .02169 | -.00102 | .00194 |
| 1 | .01351 | -.01601 | .01966 | .01137 | .00507 | .01837 |
| 2 | .00276 | -.00825 | -.05345 | .01486 | .01276 | .01530 |
| 3 | .05405 | .00522 | .01069 | -.01981 | -.00657 | .00141 |
| 4 | -.03120 | -.03196 | .01268 | .00713 | -.02358 | .01343 |
| 5 | .01551 | -.00019 | -.00989 | -.02073 | -.02089 | .00049 |
| 6 | .01003 | .00380 | -.00685 | .00072 | .01258 | .02478 |
| 7 | .01548 | -.02546 | -.03137 | .04196 | .01117 | .02323 |
| 8 | -.00522 | .00041 | .01118 | -.00749 | -.01248 | -.00587 |
| 9 | -.00485 | .00552 | .01348 | -.00294 | .02641 | -.01829 |

mean = 122.0220 mean = 123.7184 n = 2.10320282 std. dev. = .02074553

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|------|------------|
| e = | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 2 | 2 | 5 | 10 | 19 | 22 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | -.04278 | -.03600 | -.01384 | .02267 | -.00001 | .00151 |
| 1 | -.01246 | | | .02045 | .00615 | .02243 |
| 2 | .00383 | -.00720 | -.05241 | .01587 | .01326 | .02237 |
| 3 | .05499 | | .01155 | -.02399 | -.00578 | .00168 |
| 4 | -.03051 | -.03131 | | .00770 | -.02304 | |
| 5 | .01595 | .00023 | -.00950 | | -.02056 | .00020 |
| 6 | .01031 | .00408 | -.00652 | .00098 | .01283 | .02504 |
| 7 | .01575 | -.02518 | -.03108 | .04228 | | .02620 |
| 8 | | .00085 | .01165 | -.00698 | -.01193 | -.00527 |
| 9 | -.00421 | .00620 | | -.00218 | .02722 | -.01745 |

x0= 122.9222 y0= 123.7188 r0= 2.16253501 std.dev.= .02162773

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 2 | 2 | 5 | 10 | 12 | 20 | 9 |

ORIGINAL PAGE IS
OF POOR QUALITY

Disk 29-A Track data file 0001000.

MINRO: Coarse 1.0 Fine 1.0 Track 16.0
 Integration delay: .1160E+00 .4564E+00 .1344E-02
 Thresholds: .2296E+06 .9190E+05 .7352E+06

Constants: .33000 .29400 .37000 .23600
 Displacements: 0.00000 0.00000 0.00000 0.00000

| time | angle | dark | star | reference | | position | | standard deviation | |
|--------|--------|-----------|-------|-----------|-------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| 10.244 | 20.751 | .8862E+05 | 1.145 | 123.0 | 122.0 | 122.9448 | 121.9035 | .1331E-02 | .4934E-03 |
| 10.283 | 27.019 | .9380E+05 | 1.126 | 123.0 | 122.0 | 122.7479 | 121.7911 | .9856E-03 | .5090E-03 |
| 10.286 | 33.277 | .8106E+05 | 1.053 | 122.5 | 122.0 | 122.5276 | 121.7160 | .1117E-02 | .7449E-03 |
| 10.289 | 39.582 | .8919E+05 | 1.085 | 122.0 | 121.5 | 122.2929 | 121.6655 | .4229E-02 | .2151E-02 |
| 10.292 | 45.862 | .8936E+05 | 1.049 | 122.0 | 121.5 | 122.0889 | 121.6507 | .1401E-02 | .4939E-03 |
| 10.303 | 52.119 | .9265E+05 | 1.070 | 122.0 | 121.5 | 121.8679 | 121.6639 | .5500E-03 | .3407E-03 |
| 10.303 | 58.402 | .8564E+05 | 1.095 | 121.5 | 122.0 | 121.6847 | 121.6756 | .1123E-02 | .1085E-02 |
| 10.255 | 64.653 | .8111E+05 | 1.099 | 121.5 | 122.0 | 121.4434 | 121.7260 | .8066E-03 | .8966E-03 |
| 10.320 | 70.884 | .9161E+05 | 1.162 | 121.0 | 122.0 | 121.2342 | 121.7994 | .7843E-03 | .1074E-02 |
| 10.255 | 1.854 | .8852E+05 | 1.141 | 121.0 | 122.0 | 121.0070 | 121.9105 | .5724E-03 | .6396E-03 |
| 10.233 | 8.191 | .8835E+05 | 1.116 | 121.0 | 122.0 | 120.7853 | 122.0043 | .6225E-03 | .1059E-02 |
| 10.272 | 14.405 | .7876E+05 | 1.072 | 120.5 | 122.0 | 120.6575 | 122.1176 | .6735E-03 | .7473E-03 |
| 10.309 | 20.744 | .8257E+05 | 1.083 | 120.5 | 122.0 | 120.4985 | 122.2815 | .5420E-03 | .1029E-02 |
| 10.199 | 27.007 | .5618E+05 | .884 | 120.5 | 122.5 | 120.3435 | 122.4703 | .6493E-03 | .4273E-03 |
| 10.261 | 33.251 | .6281E+05 | .944 | 120.0 | 122.5 | 120.2095 | 122.6082 | .9924E-03 | .4508E-03 |
| 10.230 | 39.596 | .7679E+05 | 1.097 | 120.0 | 123.0 | 120.1075 | 122.8169 | .7538E-03 | .8457E-03 |
| 10.269 | 45.838 | .9002E+05 | 1.124 | 120.0 | 123.0 | 120.0083 | 122.9963 | .8288E-03 | .8225E-03 |
| 10.300 | 52.068 | .9703E+05 | 1.121 | 120.0 | 123.0 | 119.9280 | 123.1698 | .4377E-03 | .8784E-03 |
| 10.241 | 58.383 | .1051E+06 | .764 | 120.0 | 123.5 | 119.9007 | 123.4498 | .8863E-03 | .4846E-03 |
| 10.269 | 64.657 | .1038E+06 | 1.014 | 120.0 | 123.5 | 119.8833 | 123.6603 | .8908E-03 | .6706E-03 |
| 10.362 | 70.891 | .1134E+06 | 1.166 | 120.0 | 124.0 | 119.9001 | 123.8858 | .1553E-02 | .9273E-03 |
| 10.348 | 1.834 | .1055E+06 | 1.184 | 120.0 | 124.0 | 119.9035 | 124.0741 | .7692E-03 | .8453E-03 |
| 10.359 | 8.198 | .9869E+05 | 1.117 | 120.0 | 124.0 | 119.9652 | 124.3129 | .7041E-03 | .6816E-03 |
| 10.331 | 14.412 | .7126E+05 | .953 | 120.0 | 124.5 | 120.0484 | 124.5245 | .7767E-03 | .7027E-03 |
| 10.328 | 20.757 | .4992E+05 | 1.072 | 120.0 | 125.0 | 120.1454 | 124.7178 | .6259E-03 | .2504E-03 |
| 10.306 | 27.011 | .5067E+05 | 1.142 | 120.0 | 125.0 | 120.2446 | 124.9227 | .1194E-02 | .5443E-03 |
| 10.292 | 33.295 | .4540E+05 | 1.103 | 120.5 | 125.0 | 120.3344 | 125.0746 | .0545E-03 | .2929E-03 |
| 10.342 | 39.567 | .5308E+05 | 1.067 | 120.5 | 125.0 | 120.4907 | 125.2148 | .1166E-02 | .1179E-02 |
| 10.323 | 45.860 | .6859E+05 | .960 | 120.5 | 125.5 | 120.6058 | 125.4076 | .5217E-03 | .1801E-03 |
| 10.348 | 52.094 | .8614E+05 | .984 | 121.0 | 125.5 | 120.8529 | 125.5429 | .2774E-03 | .6607E-03 |
| 10.289 | 58.409 | .8313E+05 | 1.002 | 121.0 | 125.5 | 121.0435 | 125.6303 | .5137E-03 | .2397E-03 |
| 10.309 | 64.633 | .9829E+05 | 1.106 | 121.0 | 126.0 | 121.2467 | 125.6965 | .2989E-03 | .5767E-03 |
| 10.278 | 70.884 | .8154E+05 | 1.080 | 121.5 | 126.0 | 121.4221 | 125.7794 | .1213E-03 | .1290E-02 |
| 10.314 | 1.837 | .8254E+05 | 1.086 | 121.5 | 126.0 | 121.6249 | 125.8739 | .9909E-03 | .6754E-03 |
| 10.309 | 8.195 | .9164E+05 | 1.130 | 122.0 | 126.0 | 121.8030 | 125.9307 | .1541E-02 | .2927E-03 |

ORIGINAL PAGE IS
 OF POOR QUALITY

| | | | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|---|----|
| 10.2 | 14 | .6E+0 | 1 | 0 | 0 | 1 | 368 | 25.8 | 171 | 1 | 02 |
| 10.351 | 20.750 | .7325E+05 | 1.094 | 122.5 | 126.0 | 122.3058 | 125.8389 | .4915E-03 | .1884E-03 | | |
| 10.309 | 27.006 | .8096E+05 | 1.067 | 122.5 | 126.0 | 122.5279 | 125.7751 | .8623E-03 | .6509E-03 | | |
| 10.281 | 33.293 | .1022E+06 | 1.082 | 123.0 | 126.0 | 122.7323 | 125.6960 | .1105E-02 | .9233E-03 | | |
| 10.255 | 39.586 | .8474E+05 | .995 | 123.0 | 125.5 | 122.9393 | 125.6266 | .7517E-03 | .5490E-03 | | |
| 10.303 | 45.865 | .7734E+05 | .946 | 123.0 | 125.5 | 123.1519 | 125.5198 | .1093E-02 | .6411E-03 | | |
| 10.303 | 52.081 | .6344E+05 | .980 | 123.5 | 125.5 | 123.2962 | 125.4066 | .5953E-03 | .2850E-03 | | |
| 10.281 | 58.403 | .5481E+05 | 1.082 | 123.5 | 125.0 | 123.4472 | 125.2357 | .5525E-03 | .1273E-02 | | |
| 10.250 | 64.622 | .5091E+05 | 1.070 | 123.5 | 125.0 | 123.5915 | 125.0629 | .1278E-02 | .4972E-03 | | |
| 10.314 | 70.909 | .6743E+05 | 1.106 | 124.0 | 125.0 | 123.7511 | 124.8941 | .3441E-03 | .8742E-03 | | |
| 10.328 | 1.845 | .7459E+05 | 1.042 | 124.0 | 124.5 | 123.8709 | 124.6834 | .1612E-01 | .0936E-02 | | |
| 10.334 | 8.211 | .7208E+05 | .950 | 124.0 | 124.5 | 123.9639 | 124.5015 | .9382E-03 | .4439E-03 | | |
| 10.387 | 14.416 | .1002E+06 | 1.118 | 124.0 | 124.0 | 124.0194 | 124.2865 | .7054E-03 | .4713E-03 | | |
| 10.331 | 20.728 | .1080E+06 | 1.152 | 124.0 | 124.0 | 124.0727 | 124.0761 | .1088E-02 | .5990E-03 | | |
| 10.398 | 27.014 | .1142E+06 | 1.131 | 124.0 | 124.0 | 124.1056 | 123.8801 | .1121E-02 | .5315E-03 | | |
| 10.275 | 33.288 | .1002E+06 | .980 | 124.0 | 123.5 | 124.0908 | 123.6279 | .5144E-03 | .5124E-03 | | |
| 10.269 | 39.593 | .1027E+06 | .958 | 124.0 | 123.5 | 124.0673 | 123.4174 | .1184E-02 | .5213E-03 | | |
| 10.269 | 45.793 | .9623E+05 | 1.131 | 124.0 | 123.0 | 124.0039 | 123.1537 | .5834E-03 | .6124E-03 | | |
| 10.278 | 52.114 | .9030E+05 | 1.147 | 124.0 | 123.0 | 123.9401 | 122.9930 | .6725E-03 | .1139E-02 | | |
| 10.255 | 58.373 | .7852E+05 | 1.087 | 124.0 | 123.0 | 123.8624 | 122.8004 | .8670E-03 | .5208E-03 | | |
| 10.238 | 64.568 | .5592E+05 | .926 | 124.0 | 122.5 | 123.7644 | 122.6092 | .6460E-03 | .4821E-03 | | |
| 10.275 | 70.880 | .5248E+05 | .862 | 123.5 | 122.5 | 123.6443 | 122.4371 | .8070E-03 | .6848E-03 | | |
| 10.269 | 1.834 | .8657E+05 | 1.093 | 123.5 | 122.0 | 123.4655 | 122.2175 | .6600E-03 | .3881E-03 | | |
| 10.292 | 8.213 | .9358E+05 | 1.151 | 123.0 | 122.0 | 123.2826 | 122.1054 | .4474E-02 | .2060E-02 | | |
| 10.323 | 14.415 | .8806E+05 | 1.136 | 123.0 | 122.0 | 123.1278 | 122.0199 | .6603E-03 | .7216E-03 | | |

ORIGINAL PAGE IS
OF POOR QUALITY.

| | 1 | 2 | delta ri | 4 | 5 | 7 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | -.02080 | .00068 | .00397 | .00628 | .00119 | .01101 |
| 1 | -.00015 | -.00477 | -.00971 | -.01631 | .01878 | .00467 |
| 2 | -.00984 | -.01797 | .01166 | -.00279 | .01605 | .03776 |
| 3 | .00608 | .00376 | -.01074 | .00632 | .00376 | -.01503 |
| 4 | -.02471 | .00064 | .01478 | -.00937 | .00384 | .01775 |
| 5 | .00001 | -.02133 | .00260 | -.00527 | .00307 | .02026 |
| 6 | .00889 | -.00809 | -.01996 | .00031 | .01475 | .00129 |
| 7 | -.02075 | -.03055 | -.00103 | -.00100 | .01161 | .00113 |
| 8 | .00806 | .01978 | .00469 | .00436 | .00096 | -.00733 |
| 9 | .00021 | .01028 | .01282 | .03812 | -.00752 | -.03823 |

\bar{x} = 121.9874 \bar{y} = 123.7518 r = 2.10232615 std. dev. = .01357080

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|------|------------|
| e = | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 2 | 7 | 16 | 35 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|--------|
| 0 | -.02082 | .00066 | .00396 | .00627 | .00119 | .01101 |
| 1 | -.00415 | -.00476 | -.00970 | -.01427 | .01830 | .00473 |
| 2 | -.00982 | -.01795 | .01169 | -.00277 | .01607 | .01272 |
| 3 | .00610 | .00378 | -.01073 | .00634 | -.00375 | .01507 |
| 4 | -.02470 | .00064 | .01478 | -.00938 | .00393 | .01774 |
| 5 | -.00001 | -.02135 | .00257 | -.00530 | .00804 | .02027 |
| 6 | .00886 | -.00813 | -.02001 | .00026 | .01470 | .00123 |
| 7 | -.02081 | -.03060 | -.00107 | .01156 | .00119 | .00119 |
| 8 | .00800 | .01972 | .00654 | .00420 | .00091 | .00743 |
| 9 | .00017 | .01024 | .01278 | .02809 | .00755 | .02374 |

$\mu_0 = 121.9874$ $\mu_0 = 123.7518$ $r_0 = 2.10234356$ $\text{std.dev.} = .01368470$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|-------|-----|-----|-----|-----|-----|------|------------|
| $e =$ | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 2 | 8 | 15 | 34 | 1 |

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OF POOR QUALITY

Box 29-A Track data file TDATA05

NRRO:
Integration delay: .1160E+00
Thresholds: .2298E+06

Coarse
1.0
.1160E+00
.2298E+06

Fine
1.0
.4564E+00
.9190E+05

Track
64.0
.1244E-02
.7352E+06

Constants: .23000 .29400 .37000 .23600
Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 10.252 | 20.742 | .2719E+05 | 2.926 | 123.0 | 122.0 | 122.9514 | 121.9016 | .1116E-02 | .1325E-02 |
| 10.233 | 26.997 | .2846E+05 | 2.919 | 123.0 | 122.0 | 122.7498 | 121.7904 | .9885E-03 | .6740E-03 |
| 10.233 | 33.275 | .2574E+05 | 2.857 | 122.5 | 122.0 | 122.5347 | 121.7112 | .5344E-03 | .7449E-03 |
| 10.275 | 39.566 | .2654E+05 | 2.822 | 122.5 | 121.5 | 122.2877 | 121.6628 | .8676E-03 | .1940E-03 |
| 10.252 | 45.830 | .2604E+05 | 2.840 | 122.0 | 121.5 | 122.0964 | 121.6455 | .1186E-02 | .8461E-03 |
| 10.236 | 52.123 | .2682E+05 | 2.862 | 122.0 | 121.5 | 121.8738 | 121.6596 | .4138E-03 | .1040E-02 |
| 10.236 | 58.391 | .3040E+05 | 2.916 | 121.5 | 122.0 | 121.7069 | 121.6461 | .3372E-01 | .5214E-01 |
| 10.205 | 64.646 | .2500E+05 | 2.901 | 121.5 | 122.0 | 121.4536 | 121.7209 | .9538E-03 | .9047E-03 |
| 10.266 | 70.831 | .2746E+05 | 2.952 | 121.0 | 122.0 | 121.2449 | 121.7906 | .5155E-03 | .1019E-02 |
| 10.247 | 1.798 | .2665E+05 | 2.923 | 121.0 | 122.0 | 121.0139 | 121.9049 | .6582E-03 | .5048E-03 |
| 10.230 | 8.200 | .2666E+05 | 2.899 | 121.0 | 122.0 | 120.7922 | 121.9978 | .1053E-02 | .6911E-03 |
| 10.241 | 14.401 | .2425E+05 | 2.860 | 120.5 | 122.0 | 120.6612 | 122.1107 | .5281E-03 | .6082E-03 |
| 10.241 | 20.729 | .2489E+05 | 2.876 | 120.5 | 122.0 | 120.5056 | 122.2750 | .5429E-03 | .7124E-03 |
| 10.199 | 27.015 | .1844E+05 | 2.686 | 120.5 | 122.5 | 120.3563 | 122.4672 | .8124E-03 | .6027E-03 |
| 10.177 | 33.298 | .1992E+05 | 2.736 | 120.0 | 122.5 | 120.2147 | 122.6025 | .6998E-03 | .4955E-03 |
| 10.199 | 39.587 | .2329E+05 | 2.874 | 120.0 | 123.0 | 120.1153 | 122.8080 | .9307E-03 | .9431E-03 |
| 10.216 | 45.844 | .2571E+05 | 2.891 | 120.0 | 123.0 | 120.0171 | 122.9873 | .9530E-03 | .7157E-03 |
| 10.196 | 52.130 | .2760E+05 | 2.893 | 120.0 | 123.0 | 119.9396 | 123.1651 | .7848E-03 | .9821E-03 |
| 10.179 | 58.402 | .2918E+05 | 2.758 | 120.0 | 123.5 | 119.9113 | 123.4481 | .3500E-03 | .3691E-03 |
| 10.210 | 64.635 | .2897E+05 | 2.803 | 120.0 | 123.5 | 119.8929 | 123.6549 | .6408E-03 | .5567E-03 |
| 10.289 | 70.877 | .3176E+05 | 2.945 | 120.0 | 124.0 | 119.9136 | 123.8795 | .1111E-02 | .9814E-03 |
| 10.337 | 1.831 | .3001E+05 | 2.957 | 120.0 | 124.0 | 119.9153 | 124.0667 | .4103E-03 | .8656E-03 |
| 10.339 | 8.193 | .2884E+05 | 2.897 | 120.0 | 124.0 | 119.9733 | 124.3070 | .7642E-03 | .8810E-03 |
| 10.269 | 14.406 | .2236E+05 | 2.741 | 120.0 | 124.5 | 120.0606 | 124.5205 | .9309E-03 | .3342E-03 |
| 10.269 | 20.739 | .1834E+05 | 2.849 | 120.0 | 125.0 | 120.1547 | 124.7024 | .1148E-02 | .9269E-03 |
| 10.227 | 27.013 | .1831E+05 | 2.914 | 120.0 | 125.0 | 120.2524 | 124.9183 | .1038E-02 | .5805E-03 |
| 10.255 | 33.273 | .1743E+05 | 2.886 | 120.5 | 125.0 | 120.3449 | 125.0619 | .7577E-03 | .7155E-03 |
| 10.244 | 39.578 | .1894E+05 | 2.856 | 120.5 | 125.0 | 120.5027 | 125.2021 | .8177E-03 | .9322E-03 |
| 10.261 | 45.848 | .2186E+05 | 2.769 | 120.5 | 125.5 | 120.6955 | 125.4044 | .7937E-03 | .2605E-03 |
| 10.269 | 52.113 | .2548E+05 | 2.778 | 121.0 | 125.5 | 120.8624 | 125.5375 | .7420E-03 | .6659E-03 |
| 10.264 | 58.428 | .2484E+05 | 2.792 | 121.0 | 125.5 | 121.0544 | 125.6207 | .6927E-03 | .7658E-03 |
| 10.258 | 64.643 | .3209E+05 | 2.914 | 121.0 | 126.0 | 121.2577 | 125.6695 | .7263E-02 | .3177E-01 |
| 10.244 | 70.916 | .2518E+05 | 2.876 | 121.5 | 126.0 | 121.4390 | 125.7689 | .6799E-03 | .1183E-02 |
| 10.269 | 1.830 | .2542E+05 | 2.880 | 121.5 | 126.0 | 121.6906 | 125.9173 | .8414E-03 | .7294E-03 |
| 10.247 | 8.197 | .2794E+05 | 2.916 | 122.0 | 126.0 | 121.9105 | 126.0511 | .7014E-03 | .1494E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 10.238 | 14.753 | .2490E+05 | 2.888 | 122.5 | 126.0 | 122.3159 | 125.6317 | .9337E+03 | .7010E+03 |
| 10.252 | 27.020 | .2580E+05 | 2.865 | 122.5 | 126.0 | 122.5371 | 125.7642 | .1444E+02 | .5549E+03 |
| 10.282 | 33.297 | .3061E+05 | 2.874 | 123.0 | 126.0 | 122.7397 | 125.6335 | .1111E+02 | .1545E+02 |
| 10.241 | 39.574 | .2530E+05 | 2.783 | 123.0 | 125.5 | 122.9512 | 125.6184 | .5272E+03 | .5719E+03 |
| 10.244 | 45.847 | .2391E+05 | 2.742 | 123.0 | 125.5 | 123.1646 | 125.5157 | .7539E+03 | .8474E+03 |
| 10.250 | 52.123 | .2083E+05 | 2.788 | 123.5 | 125.5 | 123.3038 | 125.4040 | .7483E+03 | .1413E+03 |
| 10.272 | 59.412 | .1887E+05 | 2.867 | 123.5 | 125.0 | 123.4608 | 125.3253 | .1151E+02 | .1183E+02 |
| 10.230 | 64.663 | .1804E+05 | 2.852 | 123.5 | 125.0 | 123.5997 | 125.0433 | .7321E+03 | .5163E+03 |
| 10.230 | 70.830 | .2136E+05 | 2.879 | 124.0 | 125.0 | 123.7573 | 124.8343 | .1346E+01 | .4136E+02 |
| 10.241 | 1.827 | .2350E+05 | 2.815 | 124.0 | 124.5 | 123.9215 | 124.6767 | .1274E+01 | .2290E+02 |
| 10.269 | 8.175 | .2184E+05 | 2.735 | 124.0 | 124.5 | 123.9706 | 124.4952 | .3960E+03 | .7303E+03 |
| 10.297 | 14.394 | .2944E+05 | 2.896 | 124.0 | 124.0 | 124.0219 | 124.2743 | .1151E+02 | .9450E+03 |
| 10.323 | 20.754 | .3095E+05 | 2.923 | 124.0 | 124.0 | 124.0803 | 124.0637 | .7617E+03 | .3230E+03 |
| 10.343 | 27.000 | .3197E+05 | 2.906 | 124.0 | 124.0 | 124.1164 | 123.8696 | .1887E+02 | .1179E+02 |
| 10.236 | 33.277 | .2855E+05 | 2.767 | 124.0 | 123.5 | 124.1024 | 123.6203 | .3731E+03 | .3631E+03 |
| 10.241 | 39.579 | .2855E+05 | 2.750 | 124.0 | 123.5 | 124.0746 | 123.4129 | .6669E+03 | .5601E+03 |
| 10.191 | 45.848 | .2719E+05 | 2.898 | 124.0 | 123.0 | 124.0060 | 123.1395 | .9394E+03 | .9151E+03 |
| 10.194 | 52.121 | .2604E+05 | 2.914 | 124.0 | 123.0 | 123.9462 | 122.9805 | .7469E+03 | .6974E+03 |
| 10.227 | 58.410 | .2377E+05 | 2.858 | 124.0 | 123.0 | 123.8696 | 122.7875 | .1129E+02 | .7175E+03 |
| 10.219 | 64.640 | .1873E+05 | 2.708 | 124.0 | 122.5 | 123.7704 | 122.5984 | .7945E+03 | .7330E+03 |
| 10.222 | 70.905 | .1773E+05 | 2.663 | 123.5 | 122.5 | 123.6494 | 122.4317 | .5864E+03 | .4052E+03 |
| 10.244 | 1.841 | .2587E+05 | 2.893 | 123.5 | 122.0 | 123.4712 | 122.2074 | .6096E+03 | .1881E+03 |
| 10.252 | 8.201 | .2508E+05 | 2.898 | 123.5 | 122.0 | 123.2848 | 122.0998 | .1019E+02 | .7844E+03 |
| 10.203 | 14.412 | .2707E+05 | 2.911 | 123.0 | 122.0 | 123.1360 | 122.0086 | .7293E+03 | .9854E+03 |

ORIGINAL PAGE IS
OF POOR QUALITY

delta ri

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | -.02580 | -.00724 | .00171 | .00031 | -.00035 | -.01322 |
| 1 | .01656 | -.00662 | -.00830 | -.01417 | .01290 | .00824 |
| 2 | -.00834 | -.02276 | .01472 | -.00013 | .01785 | .03554 |
| 3 | .00486 | .00427 | -.01332 | .00496 | -.00093 | .01516 |
| 4 | .02469 | .00170 | .01217 | -.01331 | .00870 | .03155 |
| 5 | -.00065 | -.03816 | .00112 | -.00463 | .00332 | .01972 |
| 6 | .01173 | -.00899 | -.02319 | .00331 | .02192 | .01332 |
| 7 | -.01734 | -.03327 | -.00199 | .00606 | .01191 | .00625 |
| 8 | .00783 | .02324 | .00911 | .00387 | -.00203 | -.00622 |
| 9 | .00257 | .01104 | .00972 | .02892 | -.01204 | .02486 |

x0= 121.9961 y0= 123.7436 r0= 2.10077643 std.dev.= .01522590

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 3 | 9 | 17 | 31 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta r1 | 4 | 5 | 7 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | -.02448 | -.00536 | .00314 | .00176 | .00110 | -.01179 |
| 1 | | .00528 | -.00704 | .01502 | .02050 | .00914 |
| 2 | -.00760 | -.02220 | .01513 | .00009 | .01789 | .02541 |
| 3 | .00447 | .00368 | -.01462 | .00400 | -.00211 | .01234 |
| 4 | -.02623 | .00001 | .01024 | -.01527 | .00238 | .01912 |
| 5 | .00295 | | -.00128 | -.00196 | .00522 | .01252 |
| 6 | .00936 | -.01130 | -.02541 | .00118 | .01998 | .01022 |
| 7 | -.01907 | -.03484 | -.00338 | | .01050 | .00245 |
| 8 | .00723 | .02282 | .00892 | .00387 | -.00179 | .00650 |
| 9 | .00312 | .01176 | .01058 | .02996 | -.01089 | .02373 |

u= 121.9959 v= 123.7455 r= 2.10126305 std.dev.= .01452563

HISTOGRAM DEVIATION $\Delta = e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 2 | 8 | 18 | 29 | 3 |

ORIGINAL PAGE IS
OF POOR QUALITY

Deck 29-A Track data file TDATA07

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 1.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .7774E+00 |
| Thresholds: | .2298E+06 | .9190E+05 | .7352E+06 |
| Constants: | .33000 | .29400 | .37000 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark | | star | | reference | | position | | standard deviation | |
|--------|--------|-----------|-------|-------|-------|-----------|----------|-----------|-----------|--------------------|---|
| | | current | mag. | X | Y | X | Y | X | Y | X | Y |
| 10.303 | 14.557 | .2780E+05 | 6.185 | 123.0 | 122.0 | 123.1144 | 122.0078 | .2697E-02 | .4397E-02 | | |
| 10.289 | 20.746 | .2778E+05 | 6.194 | 123.0 | 122.0 | 122.9285 | 121.8969 | .8032E-02 | .6773E-02 | | |
| 10.272 | 26.996 | .2791E+05 | 6.193 | 123.0 | 122.0 | 122.7203 | 121.7048 | .1737E-02 | .5407E-02 | | |
| 10.297 | 33.268 | .2455E+05 | 6.185 | 122.5 | 122.0 | 122.5415 | 121.6612 | .3703E-02 | .2815E-02 | | |
| 10.266 | 39.577 | .2455E+05 | 6.132 | 122.5 | 121.5 | 121.2747 | 121.6762 | .2197E-02 | .2816E-02 | | |
| 10.275 | 45.832 | .2452E+05 | 6.109 | 122.0 | 121.5 | 122.0050 | 121.6553 | .4484E-02 | .2700E-02 | | |
| 10.323 | 52.119 | .2454E+05 | 6.132 | 122.0 | 121.5 | 121.8472 | 121.6676 | .3900E-02 | .2759E-02 | | |
| 10.266 | 58.410 | .2447E+05 | 6.181 | 121.5 | 121.5 | 121.7159 | 121.6376 | .2754E-01 | .5825E-01 | | |
| 10.292 | 64.667 | .2422E+05 | 6.183 | 121.5 | 122.0 | 121.4581 | 121.6930 | .1597E-02 | .4594E-02 | | |
| 10.281 | 70.866 | .2405E+05 | 6.202 | 121.0 | 122.0 | 121.2216 | 121.7527 | .3592E-02 | .6770E-02 | | |
| | | | | | | | | | | | |
| 10.297 | 1.838 | .2402E+05 | 6.162 | 121.0 | 122.0 | 120.9715 | 121.8612 | .2944E-02 | .2130E-02 | | |
| 10.264 | 8.207 | .2403E+05 | 6.145 | 121.0 | 122.0 | 120.7398 | 121.9584 | .1988E-02 | .3904E-02 | | |
| 10.306 | 14.408 | .2730E+05 | 6.078 | 120.5 | 122.0 | 120.6648 | 122.1122 | .1752E-02 | .2743E-02 | | |
| 10.244 | 20.740 | .2736E+05 | 6.106 | 120.5 | 122.0 | 120.5177 | 122.2719 | .2101E-02 | .3454E-02 | | |
| 10.261 | 26.989 | .2658E+05 | 5.869 | 120.5 | 122.5 | 120.3800 | 122.4939 | .2641E-02 | .2190E-02 | | |
| 10.247 | 33.277 | .2669E+05 | 5.936 | 120.0 | 122.5 | 120.2036 | 122.6189 | .3339E-02 | .1156E-02 | | |
| 10.168 | 39.553 | .2761E+05 | 6.111 | 120.0 | 123.0 | 120.0987 | 122.8104 | .1850E-02 | .4713E-02 | | |
| 10.264 | 45.829 | .2778E+05 | 6.124 | 120.0 | 123.0 | 119.9967 | 122.9950 | .3030E-03 | .3113E-02 | | |
| 10.213 | 52.108 | .2790E+05 | 6.139 | 120.0 | 123.0 | 119.9097 | 123.1811 | .2500E-02 | .4171E-02 | | |
| 10.258 | 58.403 | .2805E+05 | 6.008 | 120.0 | 123.5 | 119.8936 | 123.4573 | .3466E-02 | .4931E-02 | | |
| | | | | | | | | | | | |
| 10.196 | 64.654 | .2793E+05 | 6.059 | 120.0 | 123.5 | 119.8741 | 123.6737 | .3970E-02 | .5944E-02 | | |
| 10.342 | 70.891 | .2797E+05 | 6.131 | 120.0 | 124.0 | 119.8342 | 123.8693 | .3823E-02 | .5514E-02 | | |
| 10.351 | 1.837 | .2794E+05 | 6.136 | 120.0 | 124.0 | 119.9193 | 124.0362 | .1703E-02 | .2952E-02 | | |
| 10.339 | 8.191 | .2776E+05 | 6.074 | 120.0 | 124.5 | 120.0289 | 124.3349 | .1894E-02 | .1588E-02 | | |
| 10.261 | 14.381 | .2770E+05 | 5.997 | 120.0 | 124.5 | 120.1059 | 124.5211 | .1849E-02 | .2534E-02 | | |
| 10.303 | 20.762 | .2765E+05 | 6.091 | 120.0 | 125.0 | 120.2069 | 124.7384 | .3814E-02 | .1624E-02 | | |
| 10.320 | 26.997 | .2745E+05 | 6.123 | 120.5 | 125.0 | 120.2794 | 124.9526 | .2702E-01 | .1008E-01 | | |
| 10.300 | 33.278 | .2729E+05 | 6.088 | 120.5 | 125.0 | 120.3754 | 125.0603 | .4779E-02 | .2897E-02 | | |
| 10.241 | 39.554 | .2726E+05 | 6.057 | 120.5 | 125.0 | 120.5044 | 125.1914 | .2963E-02 | .2709E-02 | | |
| 10.244 | 45.843 | .2758E+05 | 6.029 | 120.5 | 125.5 | 120.6981 | 125.4007 | .3717E-02 | .3034E-01 | | |
| | | | | | | | | | | | |
| 10.295 | 52.119 | .2412E+05 | 6.019 | 121.0 | 125.5 | 120.6909 | 125.5837 | .3131E-02 | .1127E-02 | | |
| 10.261 | 58.397 | .2415E+05 | 6.040 | 121.0 | 125.5 | 121.0937 | 125.6735 | .4153E-02 | .2317E-02 | | |
| 10.296 | 64.640 | .2454E+05 | 6.167 | 121.0 | 126.5 | 121.2230 | 125.7635 | .2678E-01 | .1451E-01 | | |
| 10.320 | 70.895 | .2438E+05 | 6.143 | 121.5 | 126.0 | 121.4300 | 125.7999 | .3313E-02 | .4133E-02 | | |
| 10.250 | 1.820 | .2436E+05 | 6.153 | 121.5 | 126.0 | 121.2739 | 125.7947 | .1494E-02 | .2531E-02 | | |

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| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 10.267 | 8.127 | .2453E+05 | 6.133 | 122.0 | 126.0 | 122.1567 | 125.8532 | .2094E-02 | .5297E-03 |
| 10.261 | 14.385 | .2414E+05 | 6.118 | 122.5 | 126.0 | 122.3172 | 125.8830 | .1807E-02 | .1124E-02 |
| 10.278 | 20.729 | .2417E+05 | 6.102 | 122.5 | 126.0 | 122.5859 | 125.7636 | .4609E-02 | .2123E-02 |
| 10.289 | 27.002 | .2622E+05 | 6.078 | 123.0 | 126.0 | 122.7446 | 125.7165 | .8008E-02 | .1337E-01 |
| 10.289 | 39.579 | .2723E+05 | 5.998 | 123.0 | 125.5 | 122.9678 | 125.6303 | .2134E-02 | .2214E-02 |
| 10.314 | 45.831 | .2725E+05 | 5.958 | 123.0 | 125.5 | 123.1676 | 125.5005 | .3204E-02 | .2034E-02 |
| 10.269 | 52.121 | .2651E+05 | 5.991 | 123.5 | 125.5 | 123.2874 | 125.4137 | .1729E-02 | .1613E-02 |
| 10.295 | 58.405 | .2630E+05 | 6.042 | 123.5 | 125.0 | 123.4557 | 125.2470 | .3813E-02 | .1057E-02 |
| 10.255 | 64.646 | .2620E+05 | 6.015 | 123.5 | 125.0 | 123.5863 | 125.0851 | .1102E-02 | .2274E-02 |
| 10.241 | 70.859 | .2628E+05 | 6.041 | 123.5 | 125.0 | 123.7199 | 124.9369 | .2808E-02 | .5514E-02 |
| 10.297 | 1.851 | .2759E+05 | 6.035 | 124.0 | 124.5 | 123.8925 | 124.7030 | .2094E-01 | .2008E-01 |
| 10.269 | 8.192 | .2747E+05 | 5.943 | 124.0 | 124.5 | 123.9869 | 124.5135 | .3016E-02 | .3304E-02 |
| 10.244 | 14.391 | .2834E+05 | 6.108 | 124.0 | 124.5 | 124.0448 | 124.3435 | .8907E-02 | .7058E-02 |
| 10.323 | 20.762 | .2341E+05 | 6.117 | 124.0 | 124.0 | 124.6606 | 124.0407 | .2151E-02 | .3315E-02 |
| 10.334 | 26.997 | .2846E+05 | 6.107 | 124.0 | 124.0 | 124.1081 | 123.8640 | .1580E-02 | .3063E-02 |
| 10.227 | 33.282 | .2810E+05 | 5.990 | 124.0 | 123.5 | 124.0884 | 123.6252 | .2776E-02 | .1699E-02 |
| 10.194 | 39.587 | .2802E+05 | 5.955 | 124.0 | 123.5 | 124.0602 | 123.4207 | .2680E-02 | .9869E-03 |
| 10.174 | 45.837 | .2798E+05 | 6.088 | 124.0 | 123.0 | 124.0000 | 123.1376 | .3208E-02 | .4895E-02 |
| 10.160 | 52.115 | .2791E+05 | 6.098 | 124.0 | 123.0 | 123.9477 | 122.9800 | .2594E-02 | .1759E-02 |
| 10.233 | 58.397 | .2779E+05 | 6.052 | 124.0 | 123.0 | 123.0849 | 122.8006 | .2701E-02 | .1869E-02 |
| 10.194 | 64.629 | .2717E+05 | 5.903 | 124.0 | 122.5 | 123.7873 | 122.6238 | .1662E-01 | .9879E-02 |
| 10.216 | 70.881 | .2643E+05 | 5.877 | 123.5 | 122.5 | 123.6539 | 122.4613 | .1331E-02 | .2131E-02 |
| 10.258 | 1.840 | .2770E+05 | 6.201 | 123.5 | 122.0 | 123.4302 | 122.3141 | .9997E-01 | .1949E+00 |
| 10.286 | 8.195 | .2714E+05 | 6.155 | 123.5 | 122.0 | 123.2868 | 122.1049 | .3191E-02 | .3992E-02 |

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| | 1 | 2 | delta t1 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | -.02973 | -.03602 | -.01627 | .00779 | .01075 | .01377 |
| 1 | -.02252 | .01971 | .01527 | .03173 | .03391 | .02991 |
| 2 | .00179 | .01753 | -.06029 | .01327 | .01193 | .01127 |
| 3 | .05906 | .01558 | .01227 | -.03429 | .00111 | .04571 |
| 4 | -.05561 | -.05197 | .00092 | .00494 | -.01354 | .00791 |
| 5 | .02608 | .00516 | -.03857 | -.01409 | -.03476 | .00314 |
| 6 | .01813 | .01629 | -.00786 | .01917 | .02417 | .03676 |
| 7 | .01219 | -.00345 | -.01843 | -.00217 | .02522 | .01471 |
| 8 | .03411 | -.01530 | .01405 | -.00618 | -.01298 | -.00921 |
| 9 | -.00731 | .00788 | .00890 | -.00796 | -.07926 | -.01344 |

$\bar{x}_0 = 121.9965$ $\bar{x}_0 = 123.7399$ $\bar{x}_0 = 2.10123229$ $\text{std. dev.} = .02958466$

HISTOGRAM DEVIATION $\Delta = e$

| | | | | | | | |
|------------|-----|-----|-----|-----|-----|------|------------|
| $\Delta =$ | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 6 | 2 | 11 | 5 | 20 | 16 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | -.04157 | -.03788 | -.01813 | .04582 | -.01299 | -.01648 |
| 1 | -.02528 | | .01363 | .03018 | .03747 | .07758 |
| 2 | .00054 | -.01867 | -.05129 | .01239 | .01117 | .03215 |
| 3 | .05853 | .01521 | .02202 | -.03503 | -.00304 | -.04551 |
| 4 | -.05542 | -.05168 | | .00534 | -.01908 | |
| 5 | .02663 | .00573 | | -.01353 | -.03421 | .00965 |
| 6 | .01859 | .01671 | -.00752 | | .02434 | .03673 |
| 7 | .01219 | -.00358 | -.01888 | -.00332 | | .03358 |
| 8 | .03337 | -.01621 | .01303 | -.00732 | -.01423 | -.01060 |
| 9 | -.00878 | .00634 | | -.00965 | | -.02025 |

u0= 121.9962 u0= 123.7387 r0= 2.10187936 std.dev.= .02881395

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 5 | 3 | 9 | 5 | 18 | 12 | 8 |

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NRRO: Coarse Fine Track
 1.0 1.0 16.0
 Integration delay: .1160E+00 .4544E+00 .1344E+02
 Threshold: .3217E+06 .9190E+05 .7352E+06

Constants: .33000 .29400 .37000 .23700
 Displacements: 0.00000 0.00000 0.00000 0.00000

| time | angle | dark | star | reference | | position | | standard deviation | |
|--------|--------|-----------|-------|-----------|---------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| 20.055 | 14.371 | .1083E+06 | 1.146 | 123.0 | 122.0 | 123.1269 | 122.0250 | .8257E-03 | .4091E-03 |
| 20.069 | 20.766 | .1062E+06 | 1.149 | 123.0 | 122.0 | 122.9432 | 121.9162 | .1172E-02 | .4574E-03 |
| 20.071 | 26.965 | .1121E+06 | 1.131 | 123.0 | 122.0 | 122.7478 | 121.8060 | .8165E-03 | .1215E-02 |
| 20.080 | 33.292 | .1003E+06 | 1.057 | 122.5 | 122.0 | 122.5237 | 121.7286 | .1155E-02 | .6424E-03 |
| 20.063 | 39.555 | .1140E+06 | 1.156 | 122.0 | 122.0 | 122.2999 | 121.6745 | .1156E-02 | .8705E-03 |
| 20.083 | 45.832 | .1103E+06 | 1.057 | 122.0 | 121.5 | 122.0885 | 121.6597 | .5694E-03 | .4121E-03 |
| 20.041 | 52.106 | .1120E+06 | 1.077 | 122.0 | 121.5 | 121.8678 | 121.6715 | .1017E-02 | .7155E-03 |
| 20.055 | 58.397 | .1040E+06 | 1.097 | 121.5 | 122.0 | 121.6823 | 121.6854 | .1059E-02 | .1173E-02 |
| 20.069 | 64.620 | .9888E+05 | 1.101 | 121.5 | 122.0 | 121.4423 | 121.7377 | .5298E-03 | .5087E-03 |
| 20.085 | 70.870 | .1087E+06 | 1.164 | 121.0 | 122.0 | 121.2314 | 121.8113 | .1210E-02 | .9768E-03 |
| 20.080 | 1.838 | .1064E+06 | 1.141 | 121.0 | 122.0 | 121.0050 | 121.9213 | .1095E-02 | .1254E-02 |
| 20.083 | 8.199 | .1068E+06 | 1.117 | 121.0 | 122.0 | 120.7830 | 122.0122 | .5408E-03 | .1051E-02 |
| 20.091 | 14.421 | .725E+05 | 1.074 | 120.5 | 122.0 | 120.6569 | 122.1270 | .5024E-03 | .6071E-03 |
| 20.060 | 20.764 | .1018E+06 | 1.085 | 120.5 | 122.0 | 120.4967 | 122.2909 | .2308E-03 | .5525E-03 |
| 20.052 | 26.983 | .7519E+05 | .880 | 120.5 | 122.5 | 120.3427 | 122.4784 | .5132E-03 | .5391E-03 |
| 20.004 | 33.291 | .8116E+05 | .952 | 120.0 | 122.5 | 120.2067 | 122.6174 | .5405E-03 | .6216E-03 |
| 19.993 | 39.561 | .9599E+05 | 1.103 | 120.0 | 123.0 | 120.1079 | 122.8280 | .9914E-03 | .1075E-02 |
| 20.024 | 45.842 | .1083E+06 | 1.124 | 120.0 | 123.0 | 120.0066 | 123.0040 | .5534E-03 | .1165E-02 |
| 20.043 | 52.103 | .1168E+06 | 1.124 | 120.0 | 123.0 | 119.9292 | 123.1807 | .8769E-03 | .8161E-03 |
| 20.021 | 58.390 | .1231E+06 | .962 | 120.0 | 123.5 | 119.9008 | 123.4579 | .3617E-03 | .9516E-03 |
| 20.108 | 64.628 | .1628E+06 | 1.109 | 120.0 | 124.0 * | 119.8637 | 123.6157 | .5862E-01 | .7899E-01 |
| 20.113 | 70.852 | .1312E+06 | 1.169 | 120.0 | 124.0 | 119.8988 | 123.8922 | .9721E-03 | .1255E-02 |
| 20.158 | 1.831 | .1235E+06 | 1.182 | 120.0 | 124.0 | 119.9027 | 124.0605 | .6197E-03 | .6870E-02 |
| 20.133 | 8.189 | .1161E+06 | 1.117 | 120.0 | 124.0 | 119.9653 | 124.3227 | .1370E-02 | .5294E-03 |
| 20.097 | 14.402 | .8978E+05 | .955 | 120.0 | 124.5 | 120.0464 | 124.5339 | .5724E-03 | .4082E-03 |
| 20.113 | 20.750 | .6921E+05 | 1.080 | 120.0 | 125.0 | 120.1428 | 124.7261 | .7917E-03 | .1749E-02 |
| 20.108 | 27.012 | .6893E+05 | 1.147 | 120.0 | 125.0 | 120.2433 | 124.9415 | .1004E-02 | .1422E-02 |
| 20.091 | 33.282 | .6349E+05 | 1.105 | 120.5 | 125.0 | 120.3329 | 125.0841 | .5008E-03 | .1172E-02 |
| 20.074 | 39.580 | .7255E+05 | 1.069 | 120.5 | 125.0 | 120.4917 | 125.2267 | .8006E-03 | .5085E-03 |
| 20.071 | 45.836 | .8793E+05 | .953 | 120.5 | 125.5 | 120.6848 | 125.4198 | .9324E-03 | .5025E-03 |
| 20.091 | 52.095 | .1045E+06 | .983 | 121.0 | 125.5 | 120.8517 | 125.5522 | .7238E-03 | .3897E-03 |
| 20.108 | 58.495 | .1008E+06 | 1.009 | 121.0 | 125.5 | 121.0424 | 125.6409 | .6099E-03 | .7634E-03 |
| 20.066 | 64.652 | .1160E+06 | 1.111 | 121.0 | 126.0 | 121.2452 | 125.7113 | .1264E-02 | .1037E-02 |
| 20.049 | 70.984 | .9942E+05 | 1.083 | 121.5 | 126.0 | 121.4153 | 125.7944 | .2307E-02 | .5894E-03 |
| 20.088 | 1.834 | .1011E+06 | 1.038 | 121.5 | 126.0 | 121.6101 | 125.8391 | .9941E-03 | .1094E-02 |

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| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|----------|----------|
| 20.0 | 9 | .3E+0 | 1. | 122.0 | 124.0 | 122.027 | 125.0 | 122.027 | 125.0 |
| 20.060 | 14.395 | .1079E+06 | 1.127 | 122.0 | 124.0 | 122.1135 | 125.0539 | 122.0403 | 125.0403 |
| 20.049 | 20.772 | .9578E+05 | 1.096 | 122.5 | 126.0 | 122.3042 | 125.0543 | 122.0403 | 125.0403 |
| 20.015 | 27.001 | .9229E+05 | 1.071 | 122.5 | 126.0 | 122.5552 | 125.7901 | 122.0403 | 125.0403 |
| 20.035 | 33.293 | .1127E+06 | 1.033 | 123.0 | 126.0 | 122.7319 | 125.7056 | 122.0403 | 125.0403 |
| 20.066 | 49.581 | .1024E+06 | 1.000 | 123.0 | 125.5 | 122.9374 | 125.6371 | 122.0403 | 125.0403 |
| 20.066 | 45.845 | .9707E+05 | .947 | 123.0 | 125.5 | 123.1488 | 125.5313 | 122.0403 | 125.0403 |
| 20.102 | 52.093 | .8363E+05 | .925 | 123.5 | 125.5 | 123.2943 | 125.4181 | 122.0403 | 125.0403 |
| 20.094 | 58.416 | .7336E+05 | 1.084 | 123.5 | 125.0 | 123.4473 | 125.2503 | 122.0403 | 125.0403 |
| 20.024 | 64.657 | .6947E+05 | 1.074 | 123.5 | 125.0 | 123.5900 | 125.0747 | 122.0403 | 125.0403 |
| 20.024 | 70.916 | .8580E+05 | 1.110 | 124.0 | 125.0 | 123.7482 | 124.9083 | 122.0403 | 125.0403 |
| 20.083 | 1.841 | .7906E+05 | 1.056 | 124.0 | 125.0 | 123.8948 | 124.6980 | 122.0403 | 125.0403 |
| 20.099 | 8.191 | .8954E+05 | .949 | 124.0 | 124.5 | 123.9629 | 124.5127 | 122.0403 | 125.0403 |
| 20.128 | 14.414 | .1186E+06 | 1.118 | 124.0 | 124.0 | 124.0170 | 124.2965 | 122.0403 | 125.0403 |
| 20.021 | 20.775 | .1263E+06 | 1.153 | 124.0 | 124.0 | 124.0700 | 124.0851 | 122.0403 | 125.0403 |
| 20.122 | 26.994 | .1329E+06 | 1.137 | 124.0 | 124.0 | 124.1018 | 123.8954 | 122.0403 | 125.0403 |
| 20.029 | 33.311 | .1185E+06 | .989 | 124.0 | 123.5 | 124.0881 | 123.6394 | 122.0403 | 125.0403 |
| 20.004 | 39.565 | .1210E+06 | .954 | 124.0 | 123.5 | 124.0643 | 123.4306 | 122.0403 | 125.0403 |
| 19.982 | 45.780 | .1157E+06 | 1.135 | 124.0 | 123.0 | 124.0019 | 123.1659 | 122.0403 | 125.0403 |
| 20.029 | 52.115 | .1105E+06 | 1.153 | 124.0 | 123.0 | 123.9350 | 123.0031 | 122.0403 | 125.0403 |
| 20.001 | 58.411 | .9889E+05 | 1.092 | 124.0 | 123.0 | 123.8594 | 122.8151 | 122.0403 | 125.0403 |
| 20.035 | 64.660 | .7607E+05 | .934 | 124.0 | 122.5 | 123.7618 | 122.6188 | 122.0403 | 125.0403 |
| 20.004 | 70.873 | .7060E+05 | .857 | 123.5 | 122.5 | 123.6432 | 122.4492 | 122.0403 | 125.0403 |
| 20.043 | 1.837 | .1053E+06 | 1.094 | 123.5 | 122.0 | 123.4638 | 122.2296 | 122.0403 | 125.0403 |
| 20.071 | 8.196 | .1151E+06 | 1.162 | 123.0 | 122.0 | 123.2821 | 122.1118 | 122.0403 | 125.0403 |

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| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | -.02359 | -.02254 | -.00266 | .00149 | .00915 | .00293 |
| 1 | -.00810 | -.00338 | -.00606 | -.01067 | -.01660 | .02093 |
| 2 | .00435 | -.00950 | -.01778 | .01248 | -.00577 | .01610 |
| 3 | .03379 | .00344 | .02344 | -.01282 | .00331 | -.00285 |
| 4 | -.01694 | -.02449 | -.00030 | .01197 | -.01240 | .00261 |
| 5 | .01530 | -.00240 | -.01864 | .00526 | -.00555 | .00231 |
| 6 | .02225 | .01175 | -.00595 | -.01885 | -.00163 | .01313 |
| 7 | .00033 | -.01808 | -.03098 | -.00125 | .00267 | .01153 |
| 8 | -.00279 | .00607 | .01731 | .00313 | .00213 | -.00008 |
| 9 | -.01055 | -.00292 | .01000 | .01332 | .02707 | .00344 |

mean = 121.9853 x0 = 123.7634 r0 = 2.10330932 std. dev. = .01354260

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 2 | 7 | 20 | 31 | 0 |

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| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|--------|
| 0 | -.02359 | -.02246 | -.00250 | .00175 | .00250 | .00227 |
| 1 | -.00758 | -.00279 | -.00537 | -.00990 | -.01574 | .00177 |
| 2 | .00534 | -.00845 | -.01667 | .01363 | .00453 | .01737 |
| 3 | .03503 | .00469 | | -.01157 | .00454 | .00714 |
| 4 | -.01577 | -.02336 | .00078 | .01301 | -.01143 | .00349 |
| 5 | .01612 | -.00167 | -.01798 | .00585 | -.00502 | .00677 |
| 6 | .02255 | .01198 | -.00581 | -.01879 | -.00164 | .01304 |
| 7 | .00018 | -.01809 | -.03125 | .00157 | .00631 | .01114 |
| 8 | -.00320 | .00565 | .01689 | .00271 | .00172 | .00046 |
| 9 | -.01090 | -.00323 | .00974 | .01211 | .02295 | .00290 |

\bar{x} = 121.9861 \bar{y} = 123.7635 r = 2.10289550 std.dev. = .01329106

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|-------|-----|-----|-----|-----|-----|------|------------|
| $e =$ | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 2 | 6 | 18 | 33 | 1 |

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Dark 29-A Track data file T14T000:

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| NIH00: | 1.0 | 1.0 | 64.0 |
| Integration delay: | .1160E+00 | .4544E+00 | .1344E+02 |
| Thresholds: | .3217E+06 | .9190E+05 | .7352E+06 |
| Constants: | .33000 | .29400 | .37000 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 20.102 | 14.397 | .4792E+05 | 2.947 | 123.0 | 122.0 | 123.1289 | 122.0198 | .1402E-02 | .6927E-03 |
| 20.111 | 20.769 | .4781E+05 | 2.952 | 123.0 | 122.0 | 122.9459 | 121.9127 | .4088E-03 | .7563E-03 |
| 20.083 | 26.980 | .4904E+05 | 2.946 | 123.0 | 122.0 | 122.7478 | 121.8028 | .3435E-03 | .7424E-03 |
| 20.094 | 33.265 | .4492E+05 | 2.883 | 122.5 | 122.0 | 122.5292 | 121.7216 | .1250E-02 | .1562E-02 |
| 20.074 | 39.564 | .4445E+05 | 2.890 | 122.5 | 122.0 | 122.2903 | 121.6755 | .9833E-03 | .1021E-02 |
| 20.099 | 45.839 | .4509E+05 | 2.869 | 122.0 | 121.5 | 122.0902 | 121.6549 | .1366E-02 | .4350E-03 |
| 20.046 | 52.109 | .4563E+05 | 2.889 | 122.0 | 121.5 | 121.8695 | 121.6670 | .1049E-02 | .3967E-03 |
| 20.049 | 58.391 | .4466E+05 | 2.921 | 121.5 | 122.0 | 121.6857 | 121.6784 | .7093E-03 | .7245E-03 |
| 20.057 | 64.653 | .4347E+05 | 2.926 | 121.5 | 122.0 | 121.4489 | 121.7303 | .5275E-03 | .1212E-02 |
| 19.993 | 70.880 | .4539E+05 | 2.977 | 121.0 | 122.0 | 121.2379 | 121.8033 | .1341E-02 | .5632E-03 |
| 20.015 | 1.831 | .4492E+05 | 2.946 | 121.0 | 122.0 | 121.0069 | 121.9149 | .5812E-03 | .1043E-02 |
| 20.105 | 8.187 | .4492E+05 | 2.922 | 121.0 | 122.0 | 120.7849 | 122.0041 | .3631E-03 | .9244E-03 |
| 20.099 | 14.380 | .4441E+05 | 2.884 | 120.5 | 122.0 | 120.6564 | 122.1219 | .8894E-03 | .8700E-03 |
| 20.088 | 20.753 | .4540E+05 | 2.902 | 120.5 | 122.0 | 120.5003 | 122.2873 | .7947E-03 | .9993E-03 |
| 19.976 | 26.986 | .3948E+05 | 2.701 | 120.5 | 122.5 | 120.3522 | 122.4789 | .9255E-03 | .2965E-03 |
| 20.029 | 33.294 | .4092E+05 | 2.761 | 120.0 | 122.5 | 120.2102 | 122.6131 | .7012E-03 | .6573E-03 |
| 19.993 | 39.579 | .4470E+05 | 2.902 | 120.0 | 123.0 | 120.1099 | 122.8227 | .3365E-03 | .8406E-03 |
| 19.990 | 45.833 | .4724E+05 | 2.919 | 120.0 | 123.0 | 120.0085 | 122.9956 | .6044E-03 | .6322E-03 |
| 19.984 | 52.122 | .4684E+05 | 2.925 | 120.0 | 123.0 | 119.9310 | 123.1761 | .9121E-03 | .1394E-02 |
| 20.038 | 58.389 | .5037E+05 | 2.779 | 120.0 | 123.5 | 119.9057 | 123.4500 | .5555E-03 | .1974E-02 |
| 19.956 | 64.622 | .5033E+05 | 2.838 | 120.0 | 123.5 | 119.8869 | 123.6638 | .6500E-03 | .7773E-03 |
| 20.113 | 70.873 | .5240E+05 | 2.972 | 120.0 | 124.0 | 119.9057 | 123.8965 | .8068E-03 | .6843E-03 |
| 20.161 | 1.833 | .5058E+05 | 2.980 | 120.0 | 124.0 | 119.9075 | 124.0719 | .8411E-03 | .9034E-03 |
| 20.035 | 8.187 | .4525E+05 | 2.863 | 120.0 | 124.5 | 119.9768 | 124.3878 | .5711E-02 | .1151E-01 |
| 20.088 | 14.402 | .4387E+05 | 2.769 | 120.0 | 124.5 | 120.0544 | 124.5320 | .9624E-03 | .5681E-03 |
| 20.085 | 20.751 | .3981E+05 | 2.886 | 120.0 | 125.0 | 120.1512 | 124.7236 | .1239E-02 | .1186E-02 |
| 20.043 | 26.982 | .3990E+05 | 2.947 | 120.0 | 125.0 | 120.2505 | 124.9433 | .5812E-03 | .7919E-03 |
| 20.094 | 33.293 | .3864E+05 | 2.912 | 120.5 | 125.0 | 120.3419 | 125.0741 | .5529E-03 | .1161E-02 |
| 20.035 | 39.570 | .4021E+05 | 2.882 | 120.5 | 125.0 | 120.4973 | 125.2164 | .4333E-03 | .1352E-02 |
| 20.091 | 45.841 | .4299E+05 | 2.784 | 120.5 | 125.5 | 120.6902 | 125.4171 | .9624E-03 | .7564E-03 |
| 20.069 | 52.128 | .4435E+05 | 2.803 | 121.0 | 125.5 | 120.8534 | 125.5488 | .4500E-03 | .5274E-03 |
| 20.049 | 58.393 | .4331E+05 | 2.822 | 121.0 | 125.5 | 121.0471 | 125.6438 | .5624E-03 | .3883E-03 |
| 20.046 | 64.671 | .4733E+05 | 2.933 | 121.0 | 126.0 | 121.2573 | 125.7019 | .2998E-03 | .1394E-02 |
| 20.091 | 70.898 | .4400E+05 | 2.906 | 121.5 | 126.0 | 121.4075 | 125.7973 | .2931E-03 | .1824E-02 |
| 20.099 | 1.875 | .4108E+05 | 2.909 | 121.5 | 126.0 | 121.2396 | 125.8934 | .1043E-02 | .1394E-03 |

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| | | | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|------------|------------|----|----|
| 20.0 | 0 | .7E+0 | 2. | 0 | .0 | 1 | 127 | 25.8 | 04 | .7 | 03 |
| 20.074 | 14.404 | .4423E+05 | 2.932 | 122.0 | 126.0 | 122.1418 | 125.8762 | .1074E-02 | .1440E-02 | | |
| 20.097 | 20.753 | .4363E+05 | 2.915 | 122.5 | 126.0 | 122.3125 | 125.6875 | .1153E-02 | .1475E-02 | | |
| 20.026 | 27.004 | .4419E+05 | 2.821 | 122.5 | 126.0 | 122.5312 | 125.7827 | .1203E-02 | .1531E-02 | | |
| 20.055 | 33.306 | .5042E+05 | 2.902 | 123.0 | 126.0 | 122.7386 | 125.7054 | .1264E-02 | .1554E-02 | | |
| 20.035 | 39.601 | .4608E+05 | 2.814 | 123.0 | 125.5 | 122.9432 | 125.6301 | .1275E-02 | .1594E-02 | | |
| 20.102 | 45.858 | .4461E+05 | 2.763 | 123.0 | 125.5 | 123.1540 | 125.5172 | .1310E-02 | .1675E-02 | | |
| 20.071 | 52.121 | .4127E+05 | 2.800 | 123.5 | 125.5 | 123.2922 | 125.4160 | .1254E-02 | .1543E-02 | | |
| 20.055 | 58.327 | .3941E+05 | 2.824 | 123.5 | 125.0 | 123.4545 | 125.2397 | .1403E-02 | .1603E-02 | | |
| 20.066 | 64.645 | .3863E+05 | 2.876 | 123.5 | 125.0 | 123.5922 | 125.0658 | .1305E-02 | .1574E-02 | | |
| 20.043 | 70.884 | .4224E+05 | 2.906 | 124.0 | 125.0 | 123.7542 | 124.9030 | .1360E-02 | .1534E-02 | | |
| 20.060 | 1.838 | .4074E+05 | 2.858 | 124.0 | 125.0 | 123.8912 | 124.6836 | .1437E-02 | .1600E-02 | | |
| 20.055 | 8.197 | .4314E+05 | 2.760 | 124.0 | 124.5 | 123.9669 | 124.5100 | .1584E-02 | .1647E-02 | | |
| 20.122 | 14.325 | .5600E+05 | 2.952 | 124.0 | 124.0 | 124.0375 | 124.3171 | .1382E-01 | .1562E-01 | | |
| 20.108 | 20.782 | .5184E+05 | 2.951 | 124.0 | 124.0 | 124.0721 | 124.0750 | .1544E-02 | .1652E-02 | | |
| 20.144 | 27.005 | .5301E+05 | 2.939 | 124.0 | 124.0 | 124.1065 | 123.8862 | .1831E-02 | .1684E-02 | | |
| 20.057 | 33.291 | .4952E+05 | 2.798 | 124.0 | 123.5 | 124.0213 | 123.6337 | .1377E-02 | .1374E-02 | | |
| 19.973 | 39.584 | .4975E+05 | 2.768 | 124.0 | 123.5 | 124.0690 | 123.4263 | .18978E-02 | .15487E-02 | | |
| 20.004 | 45.856 | .4870E+05 | 2.929 | 124.0 | 123.0 | 124.0043 | 123.1522 | .16257E-02 | .1005E-02 | | |
| 20.038 | 52.120 | .4739E+05 | 2.943 | 124.0 | 123.0 | 123.9423 | 122.9924 | .15301E-02 | .15867E-02 | | |
| 19.959 | 58.420 | .4538E+05 | 2.891 | 124.0 | 123.0 | 123.8870 | 122.8058 | .15775E-02 | .17189E-02 | | |
| 19.979 | 64.635 | .4027E+05 | 2.738 | 124.0 | 122.5 | 123.7702 | 122.6125 | .1027E-02 | .1424E-02 | | |
| 19.965 | 70.909 | .3870E+05 | 2.681 | 123.5 | 122.5 | 123.6458 | 122.4453 | .1071E-02 | .19301E-02 | | |
| 20.088 | 1.823 | .4633E+05 | 2.912 | 123.5 | 122.0 | 123.4697 | 122.2234 | .1000E-02 | .1234E-02 | | |
| 20.074 | 8.188 | .4562E+05 | 2.932 | 123.5 | 122.0 | 123.2812 | 122.1120 | .16981E-02 | .17020E-02 | | |

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TR81-04

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|--------|--------|
| 9 | .02596 | -.00569 | -.00081 | .00307 | .00073 | .00031 |
| 8 | -.00047 | -.00009 | .00015 | -.00027 | .01333 | .00714 |
| 7 | .00095 | -.00026 | -.00036 | .01492 | .00131 | .00001 |
| 6 | .00364 | .00487 | .00436 | .01262 | .00519 | .00002 |
| 5 | -.01639 | -.00404 | -.00173 | .00304 | .01433 | .00079 |
| 4 | .01693 | -.00008 | -.00526 | .00336 | .00595 | .00021 |
| 3 | .02109 | .01328 | -.00713 | -.01679 | .00013 | .01482 |
| 2 | .00567 | -.02051 | -.00328 | -.00095 | .01027 | .00027 |
| 1 | .01804 | .00156 | .01581 | .00034 | .00074 | .00016 |
| 0 | -.00753 | .00019 | .01249 | .00868 | .02760 | .01214 |

mean = 121.9919 cov = 123.7577 r0 = 2.10272056 std.dev. = .01451920

HISTOGRAM DEVIATION

| | | | | | | | |
|------|-----|-----|-----|-----|-----|------|------------|
| mean | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 2 | 10 | 15 | 33 | 0 |

| | 1 | 2 | Delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|--------|
| 0 | -.02538 | -.02519 | .00640 | .00341 | .00100 | .00153 |
| 1 | -.00842 | -.00101 | -.00425 | -.00311 | -.01350 | .01577 |
| 2 | .00855 | -.00872 | -.02387 | .01437 | -.00132 | .02141 |
| 3 | .03803 | .00425 | .00376 | -.01323 | .00452 | |
| 4 | -.01681 | -.02451 | -.00214 | .00767 | -.01463 | .00709 |
| 5 | .01679 | -.00314 | -.02524 | .00326 | -.00574 | .00850 |
| 6 | .02147 | .01373 | -.00660 | -.01618 | -.00150 | .01558 |
| 7 | .00649 | -.01964 | -.03435 | .00002 | .01128 | .01172 |
| 8 | | .00261 | .01686 | .00137 | .00166 | .00012 |
| 9 | -.00659 | .00110 | .01334 | .00948 | .02831 | .01150 |

$\mu = 121.9910$ $\sigma = 123.7576$ $\rho = 2.10251641$ $\text{std.dev.} = .01454265$

HISTOGRAM DEVIATION $\Delta = e$

| | | | | | | | |
|-------|-----|-----|-----|-----|-----|------|------------|
| $e =$ | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 0 | 2 | 9 | 15 | 32 | 2 |

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Disk 29-A Track data file TMT011

NDRO:
Integration delay: .1160E+00
Thresholds: .3217E+06

Coarse 1.0
Fine 1.0
Track 192.0
.4564E+00
.9190E+05
.7974E+00
.7352E+06

Constants: .33000
Displacements: 0.00000
.29400
0.00000
.37000
0.00000
.23600
0.00000

| time | angle | dark | star | reference | | position | | standard deviation | |
|--------|--------|-----------|-------|-----------|---------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| 20.113 | 26.963 | .5520E+05 | 6.331 | 122.5 | 122.0 | 122.8712 | 121.5618 | .1142E-01 | .1166E-01 |
| 20.041 | 33.288 | .5538E+05 | 6.240 | 122.5 | 121.5 * | 122.4740 | 121.6527 | .2867E-01 | .5426E-01 |
| 20.069 | 39.550 | .5513E+05 | 6.182 | 122.0 | 121.5 * | 122.2758 | 121.6439 | .4253E-01 | .6557E-02 |
| 20.077 | 45.825 | .5509E+05 | 6.156 | 122.0 | 121.5 | 122.0477 | 121.6460 | .8457E-02 | .7627E-02 |
| 20.111 | 52.100 | .5513E+05 | 6.188 | 122.0 | 121.5 | 121.7795 | 121.6754 | .7117E-02 | .2881E-02 |
| 20.077 | 58.389 | .5476E+05 | 6.186 | 121.5 | 121.5 | 121.7229 | 121.6907 | .4771E-02 | .3137E-02 |
| 20.080 | 64.619 | .5473E+05 | 6.260 | 121.5 | 122.0 | 121.4479 | 121.5907 | .8479E-02 | .4121E-01 |
| 20.102 | 70.895 | .5372E+05 | 6.227 | 121.0 | 122.0 | 121.1491 | 121.6483 | .4243E-02 | .4137E-02 |
| 20.055 | 1.816 | .5381E+05 | 6.200 | 121.0 | 122.0 | 120.8671 | 121.7626 | .7490E-02 | .5120E-02 |
| 20.043 | 8.194 | .5384E+05 | 6.179 | 121.0 | 122.0 | 120.6298 | 121.8683 | .4694E-02 | .7755E-02 |
| 20.083 | 14.358 | .5571E+05 | 6.078 | 120.5 | 122.0 | 120.6522 | 122.0511 | .9932E-03 | .4649E-02 |
| 20.063 | 20.731 | .5573E+05 | 6.099 | 120.5 | 122.0 | 120.5058 | 122.2145 | .4198E-02 | .5613E-02 |
| 20.012 | 26.983 | .5444E+05 | 5.828 | 120.5 | 122.5 | 120.3577 | 122.4870 | .1958E-02 | .9873E-03 |
| 19.982 | 33.261 | .5476E+05 | 5.893 | 120.0 | 122.5 | 120.1821 | 122.6139 | .1984E-02 | .5777E-02 |
| 19.982 | 39.565 | .5647E+05 | 6.140 | 120.0 | 123.0 | 120.0630 | 122.8227 | .3603E-02 | .4814E-02 |
| 20.012 | 45.809 | .5658E+05 | 6.151 | 120.0 | 123.0 | 119.9579 | 123.0131 | .4277E-02 | .4074E-02 |
| 20.026 | 52.113 | .5674E+05 | 6.159 | 120.0 | 123.0 | 119.8664 | 123.2098 | .3861E-02 | .2615E-02 |
| 20.018 | 58.379 | .5684E+05 | 6.012 | 120.0 | 123.5 | 119.8566 | 123.4458 | .6561E-02 | .1870E-02 |
| 20.026 | 64.651 | .5691E+05 | 6.047 | 120.0 | 123.5 | 119.8360 | 123.6627 | .8327E-02 | .2592E-02 |
| 20.116 | 70.884 | .5623E+05 | 6.041 | 120.0 | 124.0 | 119.9436 | 123.8482 | .6304E-02 | .1062E-01 |
| 20.156 | 1.812 | .5634E+05 | 6.070 | 120.0 | 124.0 | 119.9146 | 123.9952 | .2140E-02 | .4437E-02 |
| 20.088 | 8.197 | .5663E+05 | 6.082 | 120.0 | 124.5 * | 120.0384 | 124.2865 | .4069E-01 | .3346E-01 |
| 20.074 | 14.404 | .5673E+05 | 6.014 | 120.0 | 124.5 | 120.1356 | 124.4949 | .7196E-02 | .4027E-02 |
| 20.094 | 20.739 | .5685E+05 | 6.124 | 120.0 | 125.0 * | 120.2306 | 124.7142 | .9433E-02 | .1591E-01 |
| 20.097 | 26.982 | .5651E+05 | 6.150 | 120.5 | 125.0 * | 120.2994 | 124.9343 | .3965E-01 | .3314E-01 |
| 20.055 | 33.276 | .5603E+05 | 6.074 | 120.5 | 125.0 | 120.3568 | 125.0297 | .5935E-02 | .4846E-02 |
| 20.088 | 39.564 | .5606E+05 | 6.039 | 120.5 | 125.0 | 120.4992 | 125.1544 | .3571E-02 | .4008E-02 |
| 20.057 | 45.844 | .5646E+05 | 6.067 | 120.5 | 125.5 | 120.6976 | 125.3590 | .5049E-02 | .2303E-01 |
| 20.043 | 52.133 | .5425E+05 | 6.029 | 121.0 | 125.5 | 120.8472 | 125.5093 | .3709E-02 | .4117E-02 |
| 20.029 | 58.414 | .5416E+05 | 6.041 | 121.0 | 125.5 | 121.0440 | 125.5973 | .4264E-02 | .3019E-02 |
| 20.052 | 64.643 | .5409E+05 | 6.095 | 121.0 | 125.5 | 121.2389 | 125.6683 | .3364E-02 | .4148E-02 |
| 20.069 | 70.891 | .5466E+05 | 6.130 | 121.5 | 126.0 | 121.4087 | 125.6759 | .9480E-02 | .2722E-01 |
| 20.066 | 1.809 | .5460E+05 | 6.165 | 121.5 | 126.0 | 121.6736 | 125.7276 | .2213E-02 | .2295E-02 |
| 20.029 | 8.193 | .5467E+05 | 6.134 | 122.0 | 126.0 | 121.9134 | 125.8040 | .5754E-02 | .1131E-01 |
| 20.069 | 14.384 | .5460E+05 | 6.123 | 122.0 | 126.0 | 122.1481 | 125.8163 | .7509E-02 | .7627E-02 |

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| | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 20.046 | 20.113 | .5602E+05 | 6.092 | 122.5 | 125.0 | 122.5000 | 125.7 | .4 | 0. |
| 20.055 | 27.006 | .5406E+05 | 6.030 | 122.5 | 125.0 | 122.5000 | 125.7250 | .4 | .411E-02 |
| 20.007 | 33.292 | .5417E+05 | 6.104 | 122.5 | 125.5 | 122.7132 | 125.7604 | .7724E-02 | .4083E-02 |
| 20.046 | 39.587 | .5654E+05 | 6.000 | 123.0 | 125.5 | 123.9574 | 125.6226 | .7404E-02 | .4342E-02 |
| 20.057 | 45.818 | .5634E+05 | 5.952 | 123.0 | 125.5 | 123.1556 | 125.5199 | .7221E-02 | .4011E-02 |
| 20.038 | 52.107 | .5533E+05 | 5.981 | 123.5 | 125.5 | 123.2577 | 125.3810 | .6652E-02 | .4011E-02 |
| 20.066 | 59.371 | .5516E+05 | 5.991 | 123.5 | 125.0 | 123.4548 | 125.2398 | .6119E-02 | .3930E-02 |
| 20.046 | 64.615 | .5515E+05 | 5.979 | 123.5 | 125.0 | 123.5819 | 125.0825 | .6028E-02 | .3404E-02 |
| 20.111 | 70.898 | .5518E+05 | 5.939 | 123.5 | 125.0 | 123.7118 | 124.9401 | .5014E-02 | .4427E-02 |
| 20.035 | 1.809 | .5504E+05 | 5.954 | 124.0 | 124.5 | 123.8772 | 124.6837 | .1831E-01 | .2256E-01 |
| 20.069 | 8.205 | .5593E+05 | 5.880 | 124.0 | 124.5 | 123.9643 | 124.5101 | .2349E-02 | .2297E-02 |
| 20.116 | 14.389 | .5725E+05 | 6.067 | 124.0 | 124.0 | 123.9728 | 124.2159 | .1921E-01 | .4401E-01 |
| 20.113 | 20.747 | .5707E+05 | 6.063 | 124.0 | 124.0 | 124.0296 | 124.0027 | .2967E-02 | .3834E-02 |
| 20.111 | 27.002 | .5714E+05 | 6.051 | 124.0 | 124.0 | 124.0785 | 123.8306 | .3149E-02 | .3377E-02 |
| 20.024 | 33.276 | .5727E+05 | 5.988 | 124.0 | 123.5 | 124.0804 | 123.6086 | .3844E-02 | .4010E-02 |
| 19.937 | 39.565 | .5715E+05 | 5.970 | 124.0 | 123.5 | 124.0447 | 123.3984 | .3601E-02 | .2713E-02 |
| 19.937 | 45.832 | .5709E+05 | 6.102 | 124.0 | 123.0 | 123.9926 | 123.1734 | .3512E-02 | .1931E-02 |
| 19.996 | 52.103 | .5692E+05 | 6.097 | 124.0 | 123.0 | 123.9541 | 123.0088 | .7562E-02 | .9904E-02 |
| 19.976 | 58.399 | .5680E+05 | 6.054 | 124.0 | 123.0 | 123.8841 | 122.8134 | .5645E-02 | .1051E-01 |
| 20.004 | 64.651 | .5593E+05 | 5.893 | 124.0 | 122.5 | 123.7700 | 122.6187 | .3074E-01 | .1734E-01 |
| 19.937 | 70.888 | .5542E+05 | 5.891 | 123.5 | 122.5 | 123.6264 | 122.4508 | .2813E-02 | .2243E-02 |
| 20.049 | 1.823 | .5694E+05 | 6.265 | 123.5 | 122.0 | 123.4022 | 122.2816 | .1503E+00 | .2523E+00 |
| 20.024 | 8.195 | .5637E+05 | 6.206 | 123.5 | 122.0 | 123.3794 | 122.0446 | .4371E-02 | .6843E-02 |
| 20.069 | 14.358 | .5729E+05 | 6.203 | 123.0 | 122.0 | 123.0712 | 121.9357 | .2070E-02 | .4034E-02 |
| 20.041 | 20.750 | .5741E+05 | 6.215 | 123.0 | 122.0 | 122.8751 | 121.8163 | .2660E-02 | .6774E-02 |

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| | 1 | 2 | delta r1 | 4 | 5 | 7 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .00121 | -.00261 | -.03836 | -.06048 | -.08292 | -.09768 |
| 1 | .06030 | -.09899 | .12038 | .16120 | .00407 | .01851 |
| 2 | -.08575 | -.01019 | -.00156 | .02663 | .06148 | .03127 |
| 3 | .03787 | -.06395 | -.01890 | -.07587 | -.09412 | -.09840 |
| 4 | -.01671 | -.00332 | -.02556 | -.00061 | .03446 | .01570 |
| 5 | .00350 | -.04273 | -.04896 | .00549 | .02322 | .01873 |
| 6 | -.00555 | .08648 | .05578 | .06500 | .00950 | .02745 |
| 7 | .01267 | .02604 | .03208 | .03754 | -.04830 | .03579 |
| 8 | -.00582 | -.00682 | -.02326 | -.02953 | -.01977 | .01166 |
| 9 | -.02153 | -.04675 | -.10552 | -.01018 | -.04057 | .02764 |

$\mu = 121.9312$ $\sigma = 123.6220$ $\rho = 2.10760498$ std. dev. = .05824283

HISTOGRAM DEVIATION $\sigma = e$

| $e =$ | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|-------|-----|-----|-----|-----|-----|------|------------|
| | 18 | 5 | 7 | 9 | 10 | 11 | 0 |

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| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | | | | -.05160 | -.07334 | -.09242 |
| 1 | | .10307 | .12253 | .16236 | .00386 | -.02130 |
| 2 | -.08986 | -.01585 | -.00900 | .01764 | .05103 | .01929 |
| 3 | .02456 | | -.03412 | | -.11265 | |
| 4 | | -.02264 | -.04514 | | .01478 | .00375 |
| 5 | -.01558 | | -.06676 | | .00750 | .00475 |
| 6 | -.01927 | .07390 | .04495 | .05567 | .00132 | .02302 |
| 7 | .00773 | .02252 | | .03765 | | .02117 |
| 8 | -.00106 | -.00073 | -.01610 | -.02112 | -.01061 | |
| 9 | | -.03555 | | .00160 | -.02986 | -.01840 |

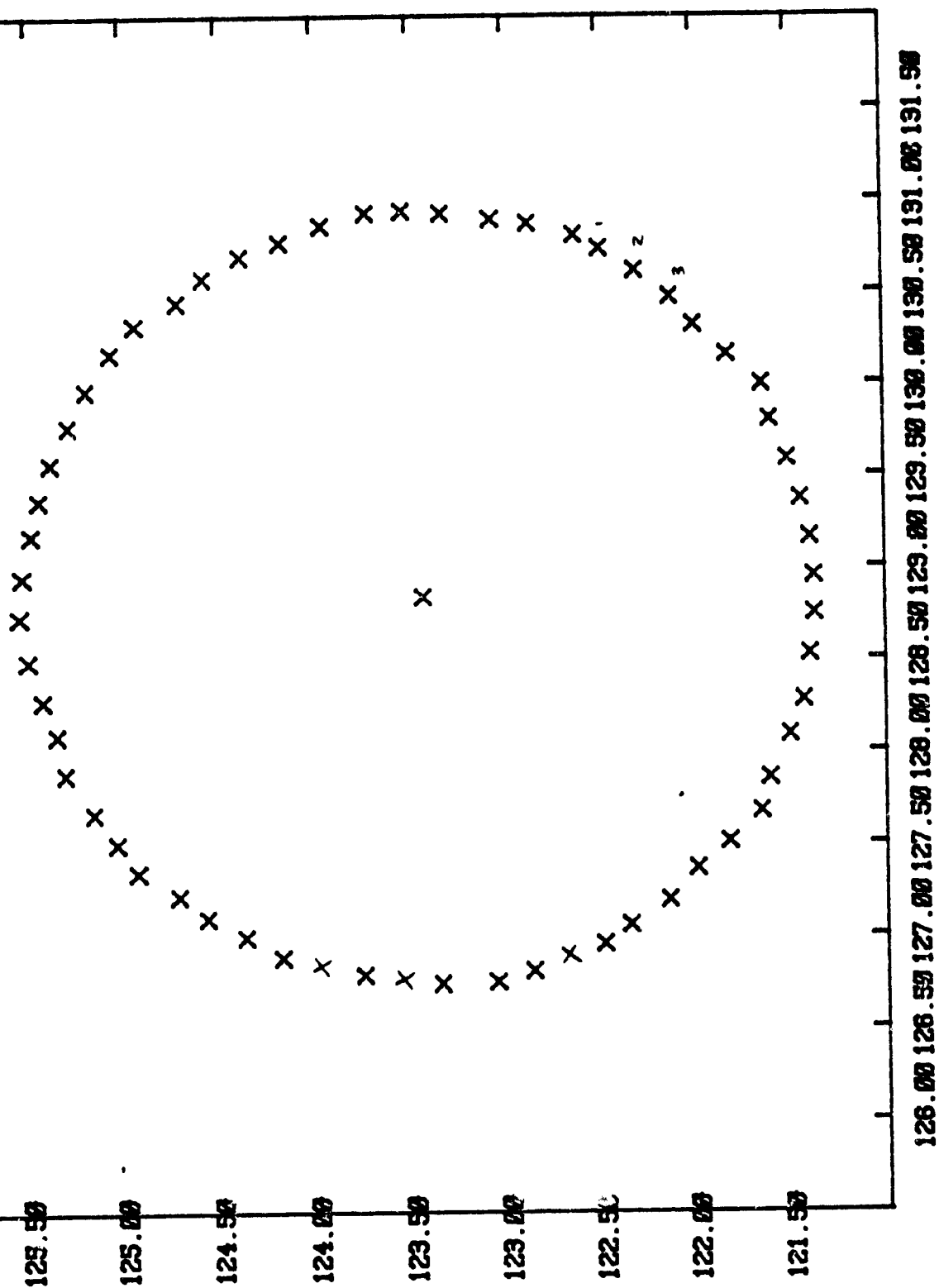
$\mu_0 = 121.9717$ $\mu_0 = 123.7046$ $r_0 = 2.11158752$ $\text{std. dev.} = .05195534$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 12 | 2 | 4 | 7 | 9 | 10 | 16 |

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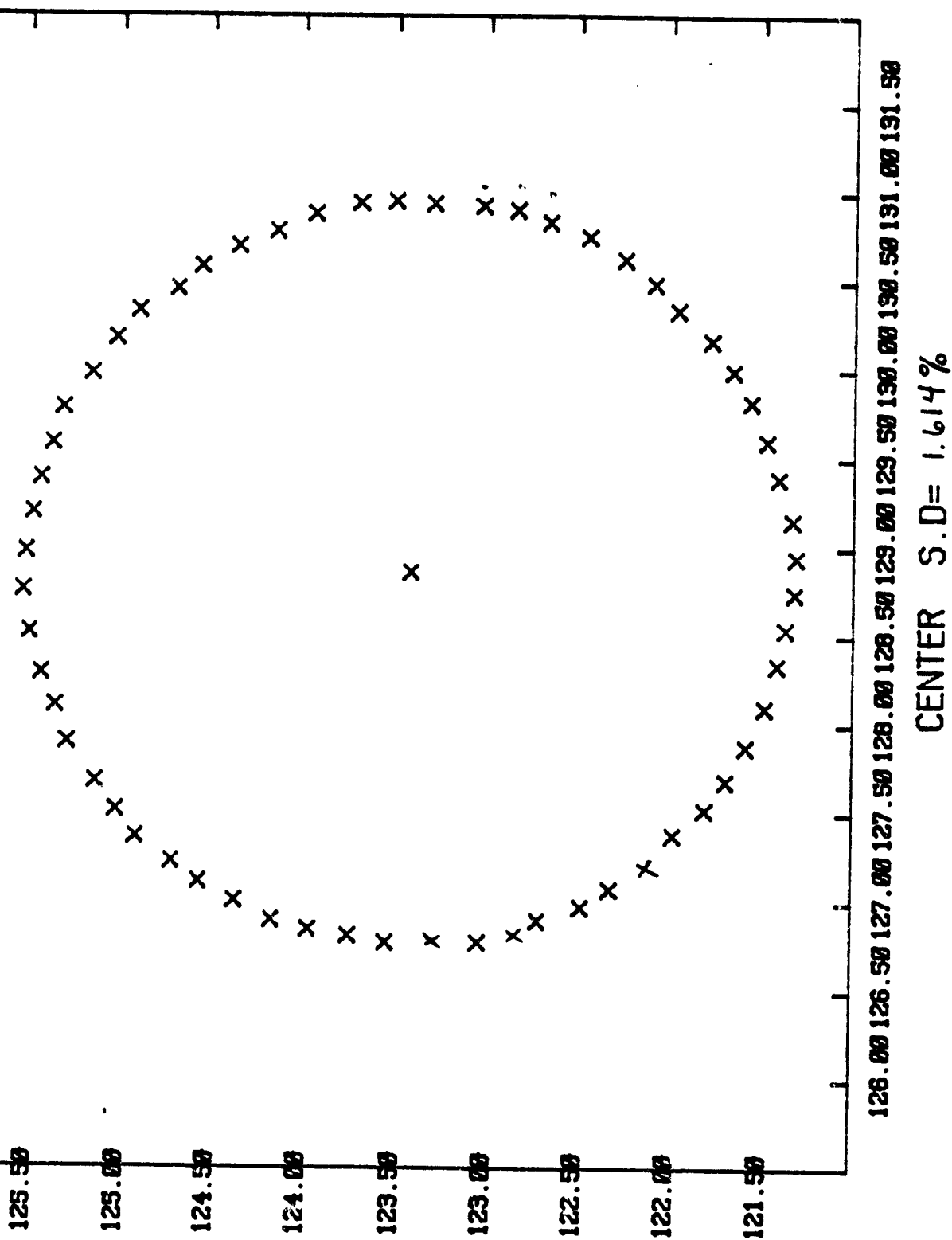


CENTER S.D= 1.846%

12-B-01 F2.8 +.3M 2 K=.317.255.406.265 100% 0°C

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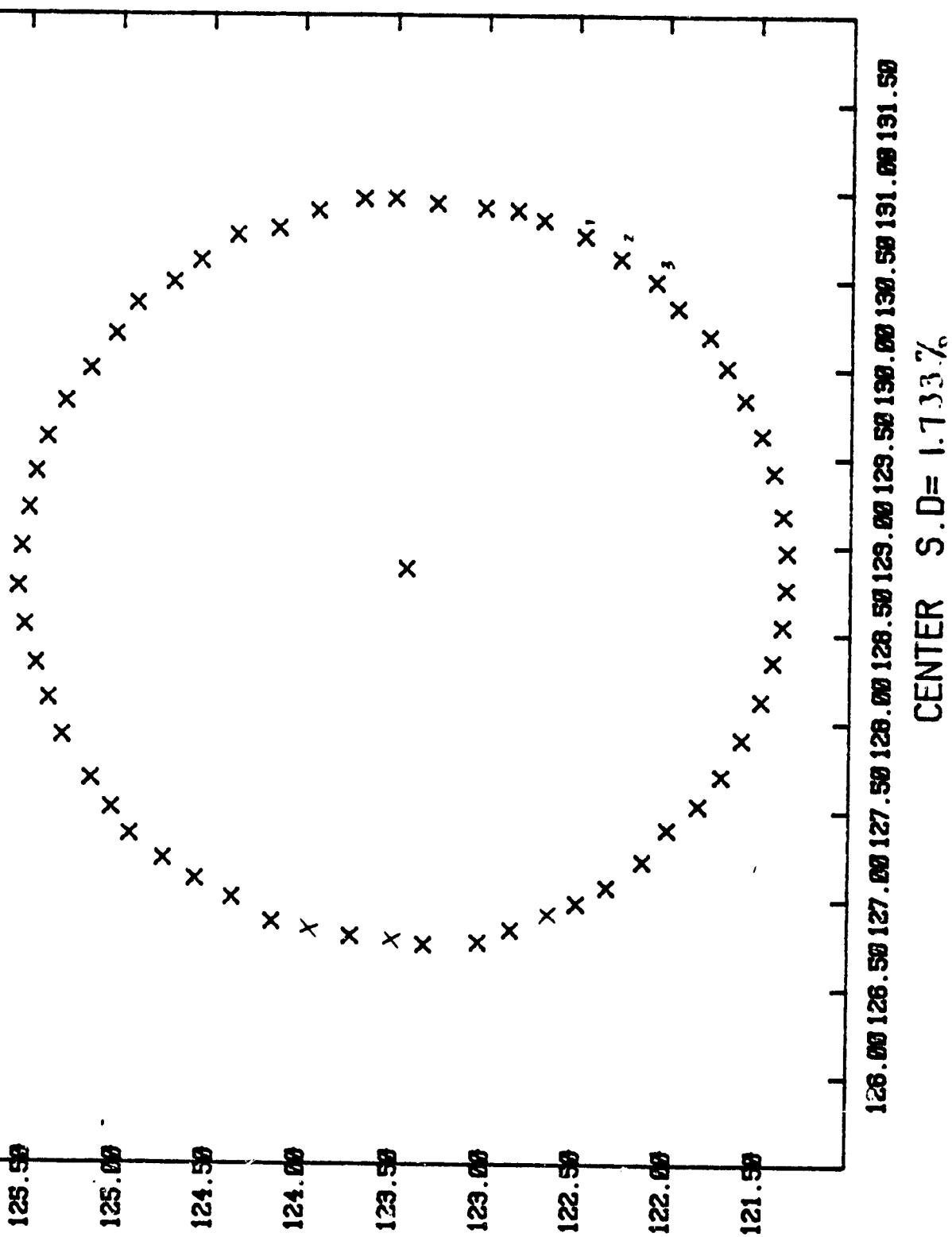
TR81-04



12-G-00 F2.8 +.3M 2 K=.317.255.406.265 10% 0°C

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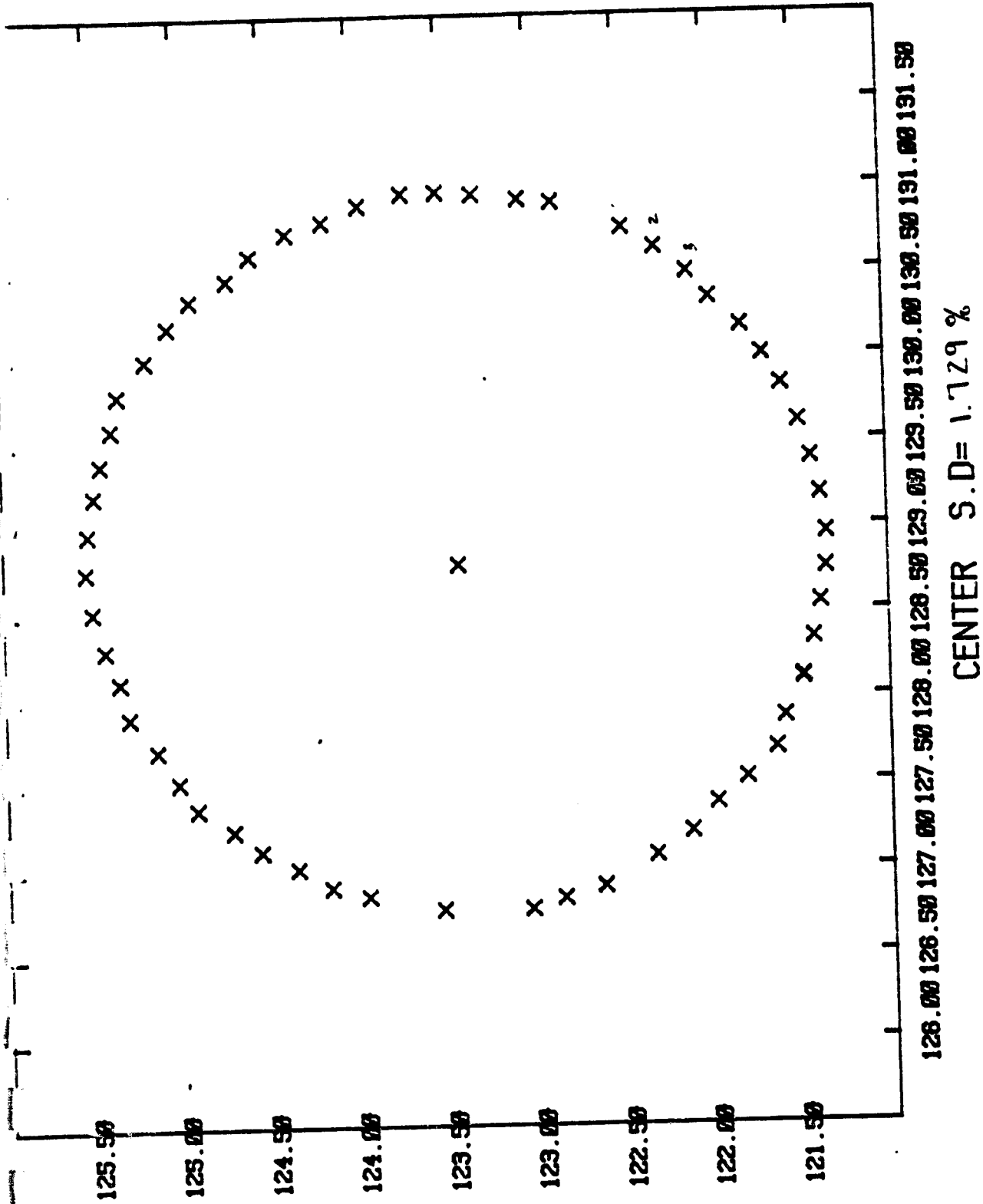
TR81-04



12-B-03 F2.8 +.3M 2 K=.317.255.406.265 <1% 0°C

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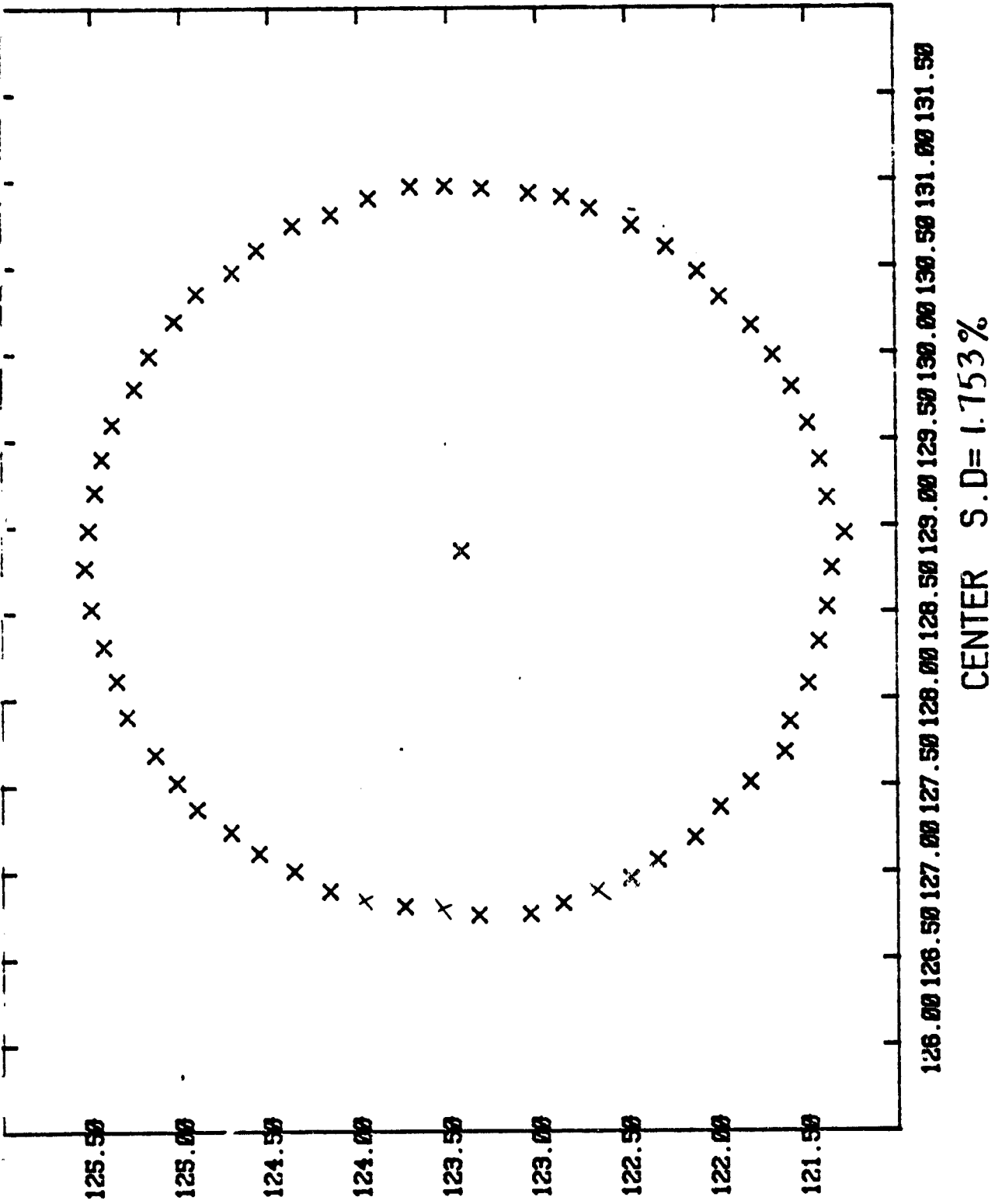
TR81-64



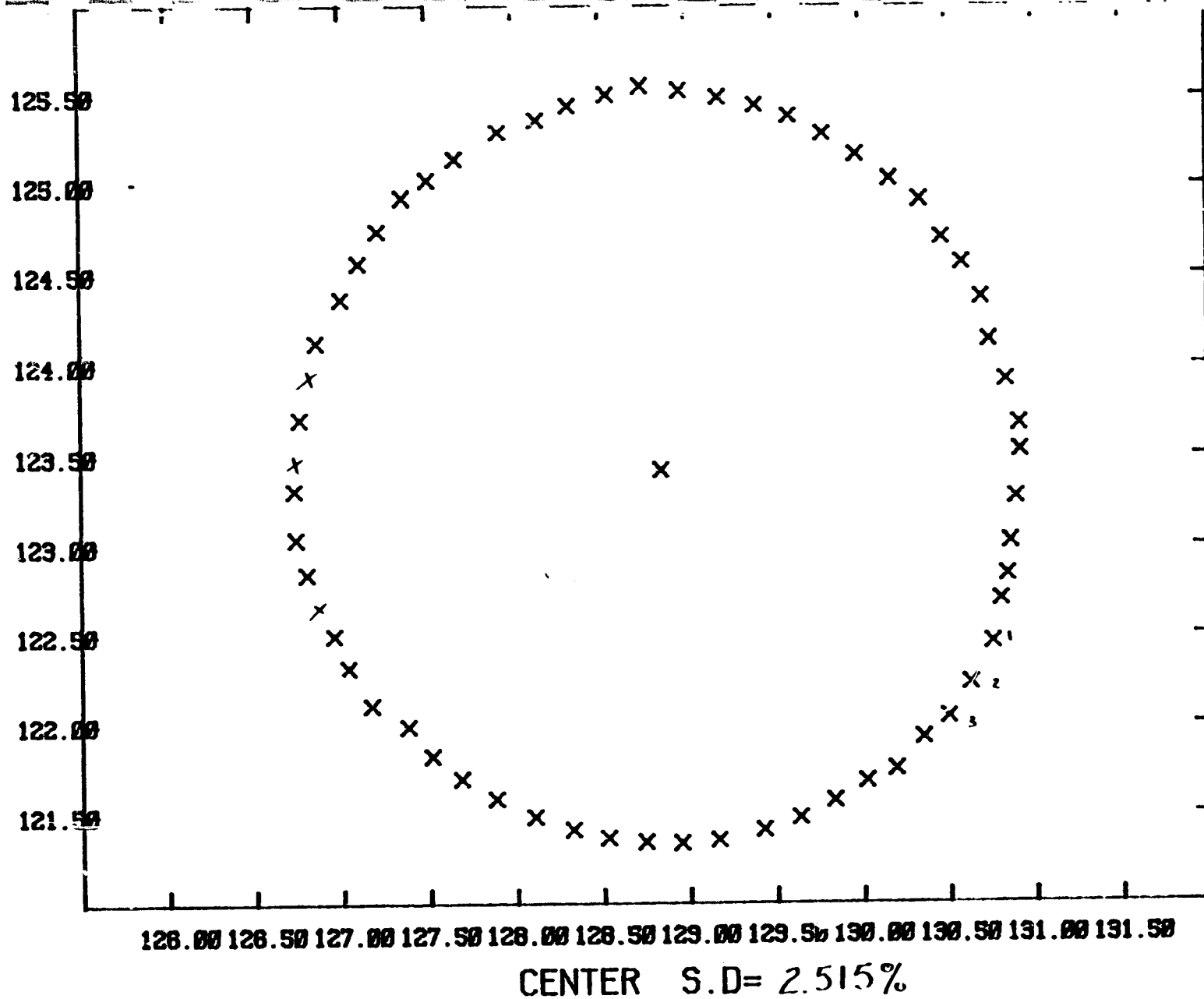
12-B-06 F2.8 +.3M 2 K=.317.255.406.265 100% 10°C

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TR81-04



12-B-05 F2.8 +.3M 2 K=.317.255.406.265 10% 10°C



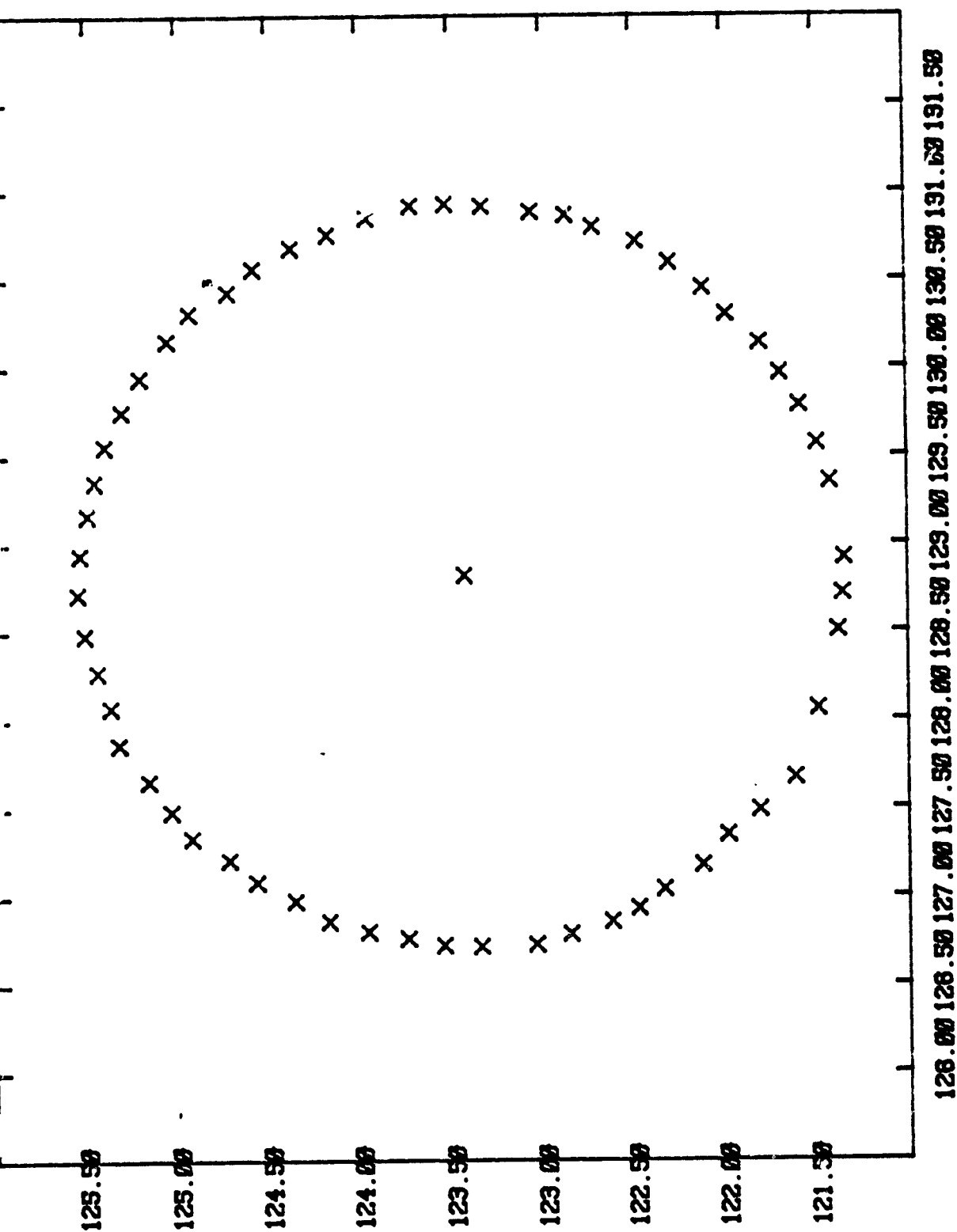
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TM61-04

12-B-04 F2.8 +.3M 2 K=.317.255.406.265 <1% 10° C

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TR81-04

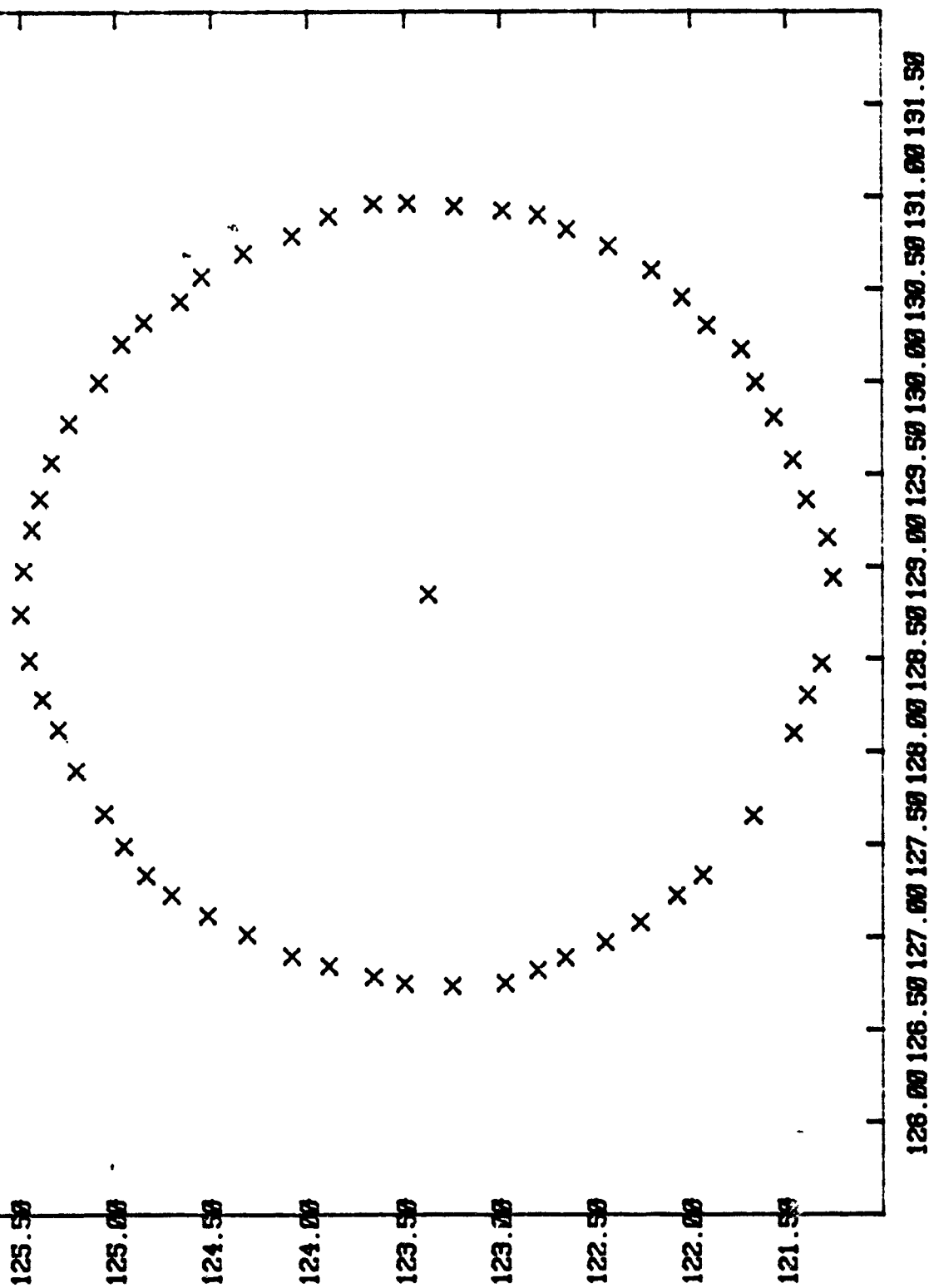


CENTER S.D= 1.637 %

12-B-07 F2.8 +.3M 2 K=.317.255.406.265 100% 20°C

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TR91-04

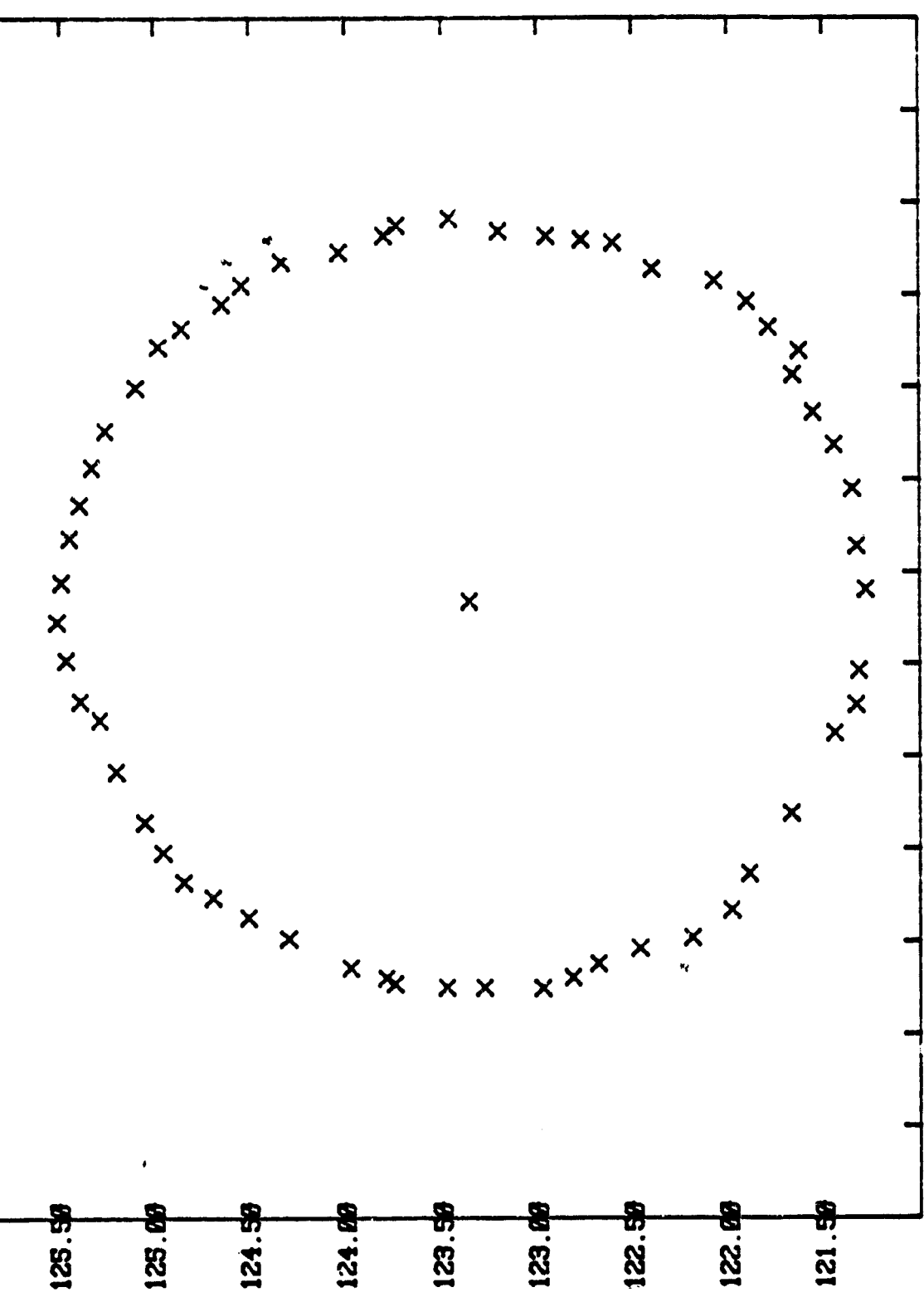


CENTER S.D= 2.439 %

12-B-08 F2.8 +.3M 2 K=.317.255.406.265 10% 20°C

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TR81-04



126.00 126.50 127.00 127.50 128.00 128.50 129.00 129.50 130.00 130.50 131.00 191.50

CENTER S.D= 4.118 %

12-B-09 F2.8 +.3M 2 K=.317.255.406.265 <1% 20°C

Disk 12-B Track data file TDATA01

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| | 1.0 | 1.0 | 16.0 |
| NDIR: | | | |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Threshold: | .1838E+06 | .9190E+05 | .7352E+06 |
| Constant: | .31700 | .25500 | .40600 |
| Displacement: | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .366 | 58.302 | .4060E+05 | .747 | 131.0 | 122.5 | 130.7300 | 122.4086 | .6747E-03 | .9744E-03 |
| .442 | 64.640 | .8094E+05 | .911 | 130.5 | 122.0 | 130.6121 | 122.3054 | .7628E-03 | .1015E-02 |
| .425 | 70.846 | .7858E+05 | .957 | 130.5 | 122.0 | 130.4679 | 122.1179 | .7317E-03 | .2744E-03 |
| .434 | 1.809 | .7446E+05 | .966 | 130.5 | 122.0 | 130.3155 | 121.9932 | .6607E-03 | .6441E-03 |
| .422 | 8.168 | .9016E+05 | .979 | 130.0 | 122.0 | 130.1533 | 121.8189 | .6344E-03 | .1257E-02 |
| .394 | 14.362 | .9708E+05 | .964 | 130.0 | 122.0 | 129.9889 | 121.6379 | .9636E-03 | .3307E-03 |
| .417 | 20.724 | .9052E+05 | .867 | 130.0 | 121.5 | 129.7995 | 121.5974 | .6736E-03 | .2649E-03 |
| .422 | 26.768 | .7369E+05 | .806 | 129.5 | 121.5 | 129.5830 | 121.5032 | .4721E-03 | .8154E-03 |
| .417 | 33.258 | .6106E+05 | .831 | 129.5 | 121.5 | 129.3670 | 121.4350 | .9576E-03 | .8377E-03 |
| .478 | 39.489 | .5930E+05 | .872 | 129.0 | 121.5 | 129.1586 | 121.3870 | .7095E-03 | .4987E-03 |
| | | | | | | | | | |
| .400 | 45.765 | .6360E+05 | .902 | 129.0 | 121.5 | 128.9467 | 121.3657 | .5666E-03 | .4629E-03 |
| .422 | 52.085 | .7200E+05 | .921 | 129.0 | 121.5 | 128.7428 | 121.3677 | .6401E-03 | .4187E-03 |
| .434 | 58.373 | .5825E+05 | .845 | 128.5 | 121.5 | 128.5229 | 121.3933 | .6052E-03 | .5430E-03 |
| .389 | 64.609 | .6445E+05 | .863 | 128.0 | 121.5 | 128.2915 | 121.4274 | .1159E-01 | .4692E-02 |
| .478 | 70.776 | .7352E+05 | .831 | 128.0 | 121.5 | 128.0950 | 121.5011 | .6036E-03 | .7727E-03 |
| .408 | 1.799 | .8378E+05 | .847 | 128.0 | 121.5 | 127.8543 | 121.6106 | .6875E-03 | .5254E-03 |
| .462 | 8.178 | .8790E+05 | .935 | 127.5 | 122.0 | 127.6739 | 121.6585 | .6453E-03 | .6454E-03 |
| .439 | 14.375 | .7703E+05 | .964 | 127.5 | 122.0 | 127.5072 | 121.8268 | .7754E-03 | .9775E-03 |
| .391 | 20.742 | .7612E+05 | .962 | 127.5 | 122.0 | 127.3646 | 121.9968 | .4791E-03 | .1154E-02 |
| .464 | 26.963 | .9527E+05 | .974 | 127.0 | 122.0 | 127.1961 | 122.1457 | .5526E-03 | .0389E-03 |
| | | | | | | | | | |
| .456 | 33.261 | .9311E+05 | .931 | 127.0 | 122.0 | 127.0597 | 122.3544 | .1177E-02 | .7745E-03 |
| .389 | 39.538 | .4401E+05 | .761 | 127.0 | 122.5 | 126.9542 | 122.4923 | .7333E-03 | .6545E-03 |
| .419 | 45.835 | .6405E+05 | .884 | 127.0 | 123.0 | 126.8799 | 122.6453 | .8394E-03 | .9251E-03 |
| .338 | 52.076 | .8732E+05 | .945 | 127.0 | 123.0 | 126.8088 | 122.8690 | .8494E-03 | .1168E-02 |
| .414 | 58.321 | .9802E+05 | .980 | 127.0 | 123.0 | 126.7503 | 123.0586 | .6762E-03 | .8364E-03 |
| .439 | 64.622 | .1111E+06 | .937 | 127.0 | 123.0 | 126.7415 | 123.3500 | .1250E-02 | .5248E-03 |
| .391 | 70.884 | .1164E+06 | .810 | 127.0 | 123.5 | 126.7467 | 123.5591 | .1093E-02 | .7388E-03 |
| .526 | 1.802 | .1300E+06 | .951 | 127.0 | 124.0 | 126.7875 | 123.7545 | .1388E-02 | .1057E-02 |
| .481 | 8.174 | .1158E+06 | 1.028 | 127.0 | 124.0 | 126.8227 | 123.9651 | .1468E-02 | .9388E-03 |
| .478 | 14.348 | .1049E+06 | 1.018 | 127.0 | 124.0 | 126.8513 | 124.1317 | .1094E-03 | .6719E-03 |
| | | | | | | | | | |
| .434 | 20.727 | .6670E+05 | .861 | 127.0 | 124.5 | 126.7721 | 124.3719 | .9319E-03 | .1408E-03 |
| .439 | 26.971 | .6732E+05 | .832 | 127.0 | 124.5 | 126.7001 | 124.5723 | .1151E-02 | .1151E-02 |
| .470 | 33.253 | .4460E+05 | .734 | 127.0 | 125.0 | 126.7103 | 124.7367 | .9314E-03 | .1251E-03 |
| .506 | 39.557 | .4156E+05 | .953 | 127.5 | 125.0 | 126.7191 | 124.9314 | .1011E-03 | .8893E-03 |
| .462 | 45.833 | .4024E+05 | .250 | 127.5 | 125.0 | 126.7507 | 125.0390 | .9701E-03 | .6472E-03 |

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| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .467 | 52.112 | .1763E+05 | .537 | 127.5 | 125.0 | 127.1622 | 125.1605 | .1763E+05 | .1763E+05 |
| .501 | 58.387 | .6627E+05 | .960 | 128.0 | 125.0 | 127.8040 | 125.3186 | .1763E+05 | .1763E+05 |
| .467 | 64.626 | .7003E+05 | .881 | 128.0 | 125.5 | 128.0920 | 125.3600 | .1763E+05 | .1763E+05 |
| .512 | 70.772 | .7550E+05 | .871 | 128.0 | 125.5 | 128.1912 | 125.4320 | .1763E+05 | .1763E+05 |
| .492 | 1.802 | .7748E+05 | .817 | 128.5 | 125.5 | 128.4996 | 125.5045 | .1763E+05 | .1763E+05 |
| .490 | 8.181 | .9413E+05 | .870 | 129.0 | 125.5 | 128.7353 | 125.5446 | .1763E+05 | .1763E+05 |
| .495 | 14.376 | .8545E+05 | .867 | 129.0 | 125.5 | 128.9538 | 125.5292 | .1763E+05 | .1763E+05 |
| .504 | 20.751 | .8070E+05 | .852 | 129.0 | 125.5 | 129.1821 | 125.4867 | .1763E+05 | .1763E+05 |
| .498 | 26.963 | .7242E+05 | .860 | 129.5 | 125.5 | 129.3665 | 125.4449 | .1763E+05 | .1763E+05 |
| .473 | 33.246 | .7038E+05 | .868 | 129.5 | 125.5 | 129.5691 | 125.3855 | .1763E+05 | .1763E+05 |
| .476 | 39.534 | .7157E+05 | .953 | 130.0 | 125.5 | 129.7714 | 125.2904 | .1763E+05 | .1763E+05 |
| .431 | 45.777 | .5449E+05 | .977 | 130.0 | 125.0 | 129.9660 | 125.1899 | .1763E+05 | .1763E+05 |
| .453 | 52.083 | .4253E+05 | .960 | 130.0 | 125.0 | 130.1671 | 125.0534 | .1763E+05 | .1763E+05 |
| .481 | 58.374 | .3946E+05 | .947 | 130.5 | 125.0 | 130.3209 | 124.9267 | .1763E+05 | .1763E+05 |
| .464 | 64.619 | .4476E+05 | .922 | 130.5 | 125.0 | 130.4434 | 124.7142 | .1763E+05 | .1763E+05 |
| .464 | 70.852 | .6863E+05 | .814 | 130.5 | 124.5 | 130.5753 | 124.5743 | .1763E+05 | .1763E+05 |
| .501 | 1.816 | .6780E+05 | .842 | 130.5 | 124.5 | 130.6903 | 124.3738 | .1763E+05 | .1763E+05 |
| .577 | 8.181 | .1106E+06 | 1.005 | 131.0 | 124.0 | 130.7696 | 124.1634 | .1763E+05 | .1763E+05 |
| .498 | 14.384 | .1199E+06 | 1.006 | 131.0 | 124.0 | 130.8616 | 123.9493 | .1763E+05 | .1763E+05 |
| .518 | 20.755 | .1287E+06 | .960 | 131.0 | 124.0 | 130.9282 | 123.7155 | .1763E+05 | .1763E+05 |
| .391 | 26.965 | .1093E+06 | .829 | 131.0 | 123.5 | 130.9373 | 123.5267 | .1763E+05 | .1763E+05 |
| .450 | 33.241 | .1036E+06 | .964 | 131.0 | 123.0 | 130.9261 | 123.3243 | .1763E+05 | .1763E+05 |
| .462 | 39.551 | .9420E+05 | 1.006 | 131.0 | 123.0 | 130.8929 | 123.0596 | .1763E+05 | .1763E+05 |
| .442 | 45.804 | .8611E+05 | .953 | 131.0 | 123.0 | 130.8706 | 122.8717 | .1763E+05 | .1763E+05 |
| .481 | 52.076 | .6573E+05 | .867 | 131.0 | 123.0 | 130.8055 | 122.6216 | .1763E+05 | .1763E+05 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta r1 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .02670 | .01446 | .00730 | -.01423 | .00497 | .04551 |
| 1 | -.01449 | -.01783 | -.01952 | -.01570 | -.01600 | -.01551 |
| 2 | -.02209 | -.00727 | -.01251 | -.01504 | .02618 | -.00017 |
| 3 | -.02867 | .00005 | -.00671 | .01898 | .02381 | .01910 |
| 4 | .03376 | .01063 | .00740 | -.01215 | -.00479 | .00770 |
| 5 | -.02224 | -.01084 | -.01770 | .02372 | -.00075 | .00177 |
| 6 | .02326 | -.02375 | -.01512 | .00856 | .02367 | .00883 |
| 7 | -.00825 | -.00997 | -.00573 | -.01184 | -.00273 | .00553 |
| 8 | .01442 | -.03626 | -.01142 | -.01240 | -.02290 | -.00107 |
| 9 | .01993 | .01236 | -.00211 | -.00006 | .02030 | .00017 |

0= 128.8337 r0= 123.4352 r0= 2.08828307 std.dev.= .0181714

HISTOGRAM DEVIATION 0= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 2 | 3 | 12 | 22 | 21 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | delta rj | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | .02652 | .01425 | .00667 | -.02453 | -.00515 | .04521 |
| 1 | .01430 | -.01817 | -.01987 | -.01556 | .01637 | .01192 |
| 2 | .02247 | | -.01289 | -.01541 | .02581 | .00075 |
| 3 | .02902 | -.00028 | -.00703 | .01068 | .02352 | .01834 |
| 4 | .03352 | .01043 | .00722 | -.01251 | -.00492 | .00650 |
| 5 | .02231 | -.01089 | -.01773 | .02372 | -.00073 | -.00124 |
| 6 | .02332 | -.02367 | -.01503 | .00867 | .02378 | .00093 |
| 7 | -.00812 | -.00984 | -.00561 | -.01172 | -.00261 | .00539 |
| 8 | .01451 | -.03618 | -.01135 | -.01235 | -.02287 | .00102 |
| 9 | .01990 | .01231 | .00204 | -.00017 | .02017 | .04002 |

$\lambda_0 = 128.8386$
 $\lambda_0 = 123.4350$
 $r_0 = 2.03341515$
 std.dev. = .01345740

HISTOGRAM DEVIATION $\geq e$

| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
|----|-----|-----|-----|-----|-----|------|------------|
| | 0 | 2 | 3 | 12 | 22 | 20 | 1 |

ORIGINAL PAGE IS
 OF POOR QUALITY

Disk 12-B

Track data file IDATA00

Center

| | | | |
|--------------------|-----------|-----------|-----------|
| NDR01: | Coarse | Fine | Track |
| | 1.0 | 1.0 | 64.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |
| Constants: | .31700 | .25500 | .40600 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark | star | reference | | position | | standard deviation | |
|------|--------|-----------|-------|-----------|-------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| .442 | 39.540 | .1934E+05 | 2.756 | 131.0 | 123.0 | 130.9253 | 123.0338 | .2664E-02 | .5521E-03 |
| .414 | 45.814 | .1761E+05 | 2.704 | 131.0 | 123.0 | 130.9020 | 122.8473 | .1363E-02 | .1668E-02 |
| .383 | 52.093 | .1262E+05 | 2.568 | 131.0 | 122.5 | 130.8356 | 122.6640 | .9333E-02 | .5716E-02 |
| .391 | 58.379 | .8190E+04 | 2.523 | 131.0 | 122.5 | 130.7550 | 122.4513 | .1203E-02 | .1051E-02 |
| .425 | 64.635 | .1771E+05 | 2.692 | 130.5 | 122.0 | 130.6266 | 122.2569 | .9373E-03 | .8342E-03 |
| .417 | 70.838 | .1717E+05 | 2.724 | 130.5 | 122.0 | 130.4974 | 122.0894 | .1921E-02 | .1255E-02 |
| .470 | 1.798 | .1679E+05 | 2.723 | 130.5 | 122.0 | 130.3360 | 121.9613 | .1092E-02 | .1071E-02 |
| .467 | 8.171 | .2076E+05 | 2.739 | 130.0 | 122.0 | 130.1682 | 121.7788 | .1291E-02 | .1359E-02 |
| .459 | 14.384 | .1822E+05 | 2.657 | 130.0 | 121.5 | 129.9971 | 121.6615 | .1161E-02 | .1530E-02 |
| .456 | 20.728 | .1893E+05 | 2.633 | 130.0 | 121.5 | 129.8194 | 121.5642 | .2053E-02 | .9243E-03 |
| .473 | 26.947 | .1466E+05 | 2.585 | 129.5 | 121.5 | 129.6000 | 121.4731 | .7740E-03 | .1344E-02 |
| .456 | 33.252 | .1249E+05 | 2.616 | 129.5 | 121.5 | 129.3917 | 121.4679 | .1549E-02 | .2127E-02 |
| .520 | 39.555 | .1219E+05 | 2.730 | 129.0 | 121.0 | 129.1535 | 121.3324 | .1083E-02 | .1027E-02 |
| .436 | 45.820 | .1313E+05 | 2.757 | 129.0 | 121.0 | 128.9448 | 121.3113 | .9227E-03 | .1855E-02 |
| .425 | 52.115 | .1508E+05 | 2.786 | 129.0 | 121.0 | 128.7422 | 121.3179 | .7243E-03 | .1248E-02 |
| .504 | 58.367 | .1205E+05 | 2.628 | 128.5 | 121.5 | 128.5393 | 121.3676 | .1493E-02 | .1257E-02 |
| .439 | 64.606 | .1263E+05 | 2.605 | 128.5 | 121.5 | 128.3397 | 121.4119 | .1293E-02 | .1777E-02 |
| .445 | 70.866 | .1524E+05 | 2.598 | 128.0 | 121.5 | 128.0990 | 121.4764 | .5728E-03 | .8650E-03 |
| .425 | 1.823 | .1776E+05 | 2.606 | 128.0 | 121.5 | 127.8774 | 121.5797 | .9552E-03 | .1014E-02 |
| .462 | 8.172 | .1567E+05 | 2.644 | 127.5 | 121.5 | 127.6868 | 121.6874 | .6225E-03 | .6233E-03 |
| .473 | 14.373 | .1785E+05 | 2.733 | 127.5 | 122.0 | 127.5241 | 121.7993 | .1082E-02 | .1193E-02 |
| .450 | 20.734 | .1701E+05 | 2.727 | 127.5 | 122.0 | 127.3817 | 121.9697 | .1020E-02 | .9528E-03 |
| .481 | 26.965 | .2094E+05 | 2.739 | 127.0 | 122.0 | 127.2141 | 122.1121 | .1073E-02 | .1215E-02 |
| .419 | 33.261 | .2113E+05 | 2.698 | 127.0 | 122.0 | 127.0736 | 122.3145 | .1853E-02 | .3849E-03 |
| .405 | 39.551 | .9387E+04 | 2.524 | 127.0 | 122.5 | 126.9753 | 122.4681 | .1082E-02 | .1214E-02 |
| .400 | 45.821 | .1332E+05 | 2.601 | 127.0 | 122.5 | 126.8958 | 122.6705 | .8619E-02 | .2485E-01 |
| .408 | 52.085 | .1785E+05 | 2.699 | 127.0 | 123.0 | 126.8351 | 122.8464 | .1846E-02 | .1088E-02 |
| .383 | 58.373 | .2044E+05 | 2.734 | 127.0 | 123.0 | 126.7718 | 123.0288 | .1038E-02 | .1762E-02 |
| .391 | 64.634 | .2309E+05 | 2.702 | 127.0 | 123.0 | 126.7641 | 123.3111 | .9103E-03 | .3591E-02 |
| .389 | 70.884 | .2424E+05 | 2.575 | 127.0 | 123.5 | 126.7717 | 123.5337 | .1808E-02 | .1131E-02 |
| .484 | 1.831 | .2891E+05 | 2.721 | 127.0 | 124.0 | 126.8114 | 123.7334 | .1831E-02 | .1329E-02 |
| .543 | 8.185 | .2562E+05 | 2.787 | 127.0 | 124.0 | 126.8459 | 123.9455 | .1293E-02 | .1184E-02 |
| .554 | 14.369 | .2322E+05 | 2.782 | 127.0 | 124.0 | 126.8976 | 124.1475 | .1183E-02 | .1858E-02 |
| .453 | 20.760 | .1414E+05 | 2.632 | 127.0 | 124.5 | 127.0096 | 124.3503 | .7827E-03 | .1375E-02 |
| .459 | 26.967 | .1389E+05 | 2.584 | 127.0 | 124.5 | 127.1143 | 124.5480 | .1438E-02 | .7120E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

TR61-04

| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .459 | 39.560 | .9192E+04 | 2.709 | 127.5 | 125.0 | 127.3649 | 124.9027 | .3090E-03 | .1540E-02 |
| .478 | 45.827 | .9032E+04 | 2.708 | 127.5 | 125.0 | 127.5165 | 125.0125 | .2149E-02 | .1465E-02 |
| .450 | 52.074 | .1018E+05 | 2.704 | 127.5 | 125.0 | 127.6762 | 125.1227 | .3672E-03 | .1739E-02 |
| .439 | 58.365 | .1407E+05 | 2.717 | 128.0 | 125.0 | 127.8964 | 125.2762 | .1717E-02 | .1796E-02 |
| .473 | 64.620 | .1453E+05 | 2.648 | 128.0 | 125.5 | 128.1001 | 125.3416 | .1713E-02 | .1691E-02 |
| .422 | 70.873 | .1486E+05 | 2.621 | 128.5 | 125.5 | 128.2987 | 125.4208 | .5342E-02 | .1650E-02 |
| .478 | 1.816 | .1599E+05 | 2.586 | 128.5 | 125.5 | 128.5148 | 125.4871 | .8365E-03 | .1751E-03 |
| .456 | 8.189 | .1985E+05 | 2.636 | 129.0 | 125.5 | 128.7520 | 125.5244 | .1104E-02 | .1250E-02 |
| .428 | 14.387 | .1808E+05 | 2.627 | 129.0 | 125.5 | 128.9689 | 125.5088 | .1463E-02 | .6797E-03 |
| .448 | 20.756 | .1679E+05 | 2.615 | 129.0 | 125.5 | 129.1900 | 125.4712 | .1117E-02 | .1655E-02 |
| .498 | 26.971 | .1506E+05 | 2.630 | 129.5 | 125.5 | 129.3864 | 125.4293 | .5073E-03 | .1129E-02 |
| .431 | 33.245 | .1430E+05 | 2.639 | 129.5 | 125.5 | 129.5806 | 125.3687 | .7806E-03 | .1908E-02 |
| .456 | 39.558 | .1545E+05 | 2.731 | 130.0 | 125.0 | 129.7803 | 125.3113 | .2121E-02 | .4119E-02 |
| .419 | 45.831 | .1176E+05 | 2.726 | 130.0 | 125.0 | 129.9775 | 125.1573 | .1449E-02 | .2957E-02 |
| .453 | 52.083 | .9591E+04 | 2.712 | 130.0 | 125.0 | 130.1739 | 125.0262 | .2378E-02 | .2306E-02 |
| .473 | 58.364 | .8889E+04 | 2.705 | 130.5 | 125.0 | 130.3319 | 124.9032 | .7045E-03 | .1460E-02 |
| .481 | 64.618 | .9783E+04 | 2.681 | 130.5 | 125.0 | 130.4557 | 124.6933 | .1034E-02 | .1424E-02 |
| .487 | 70.887 | .1417E+05 | 2.573 | 130.5 | 124.5 | 130.5835 | 124.5568 | .1744E-02 | .2169E-02 |
| .509 | 1.830 | .1415E+05 | 2.620 | 130.5 | 124.5 | 130.6977 | 124.3580 | .2089E-02 | .1668E-02 |
| .511 | 8.198 | .2448E+05 | 2.766 | 131.0 | 124.0 | 130.7842 | 124.1475 | .1409E-02 | .1115E-02 |
| .507 | 14.361 | .2623E+05 | 2.766 | 131.0 | 124.0 | 130.8810 | 123.9381 | .1959E-02 | .1119E-02 |
| .520 | 20.747 | .2846E+05 | 2.725 | 131.0 | 124.0 | 130.9425 | 123.7029 | .2135E-02 | .1451E-02 |
| .428 | 26.968 | .2272E+05 | 2.590 | 131.0 | 123.5 | 130.9521 | 123.5097 | .1345E-02 | .1620E-02 |
| .431 | 33.252 | .2161E+05 | 2.720 | 131.0 | 123.0 | 130.9394 | 123.2979 | .1201E-02 | .1658E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .01081 | .02976 | .02343 | .03546 | .02143 | .00767 |
| 1 | -.01991 | .00293 | -.00237 | -.00786 | -.01478 | -.01670 |
| 2 | .00988 | .01203 | .00620 | -.02113 | -.02396 | -.01096 |
| 3 | -.01165 | -.00504 | .00328 | -.02550 | .00633 | .00571 |
| 4 | .01697 | .00868 | .01162 | .03234 | .00772 | .00135 |
| 5 | -.01680 | -.00678 | .00542 | .01547 | -.00718 | .01034 |
| 6 | .02154 | .00003 | -.00917 | .00920 | .01543 | .00337 |
| 7 | .01467 | .02628 | .01088 | -.00314 | -.00372 | -.00132 |
| 8 | .02208 | -.01600 | -.00704 | .00499 | -.04194 | .01927 |
| 9 | -.02144 | -.02848 | -.00010 | .01422 | .00582 | .00614 |

x0= 128.8590 y0= 123.4112 r0= 2.08962011 std.dev.= .01604190

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 2 | 11 | 18 | 28 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri | 3 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|---------|
| 0 | .01071 | .02967 | | .02337 | .03541 | .02141 | .00763 |
| 1 | -.01987 | -.00299 | | -.00228 | -.00773 | -.01462 | -.01651 |
| 2 | .01010 | .01278 | | .00718 | -.02083 | -.02363 | .01060 |
| 3 | -.01127 | -.00464 | | .00369 | -.02508 | .00681 | .00615 |
| 4 | .01742 | | | .01206 | .03278 | .00815 | .00177 |
| 5 | -.01640 | -.00640 | | .00579 | -.01513 | .00686 | .01004 |
| 6 | .02181 | .00027 | | -.00895 | .00938 | -.01528 | -.00125 |
| 7 | .01475 | .02633 | | .01091 | -.00814 | -.00374 | -.00342 |
| 8 | .02202 | -.01609 | | -.00714 | .00677 | -.04207 | -.01943 |
| 9 | -.02158 | -.02862 | | -.00024 | .01408 | .00569 | -.00626 |

$\mu_0 = 128.3593$ $\gamma_0 = 123.4113$ $r_0 = 2.08946872$ $\text{std.dev.} = .01613590$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 2 | 11 | 19 | 26 | 1 |

ORIGINAL PAGE IS
OF POOR QUALITY

TM61-04

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| NDR01 | 1.0 | 1.0 | 192.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .7974E+00 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .31700 | .25500 | .40600 | .26500 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark | star | reference | | position | | standard deviation | |
|------|--------|-----------|-------|-----------|-------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| .450 | 58.367 | .1176E+05 | 5.751 | 131.0 | 122.5 | 130.7507 | 122.4666 | .2677E-02 | .1510E-02 |
| .490 | 64.606 | .1074E+05 | 5.957 | 130.5 | 122.0 | 130.6227 | 122.2725 | .9544E-02 | .5230E-01 |
| .464 | 70.830 | .1034E+05 | 5.952 | 130.5 | 122.0 | 130.4936 | 122.0675 | .2067E-02 | .4651E-02 |
| .481 | 1.808 | .1035E+05 | 5.963 | 130.5 | 122.0 | 130.3452 | 121.9490 | .1984E-02 | .1459E-02 |
| .504 | 8.195 | .1068E+05 | 5.970 | 130.0 | 122.0 | 130.1842 | 121.7745 | .1644E-02 | .4406E-02 |
| .467 | 14.396 | .1064E+05 | 5.924 | 130.0 | 121.5 | 130.0084 | 121.6902 | .1950E-02 | .1069E-02 |
| .476 | 20.740 | .1066E+05 | 5.898 | 130.0 | 121.5 | 129.8288 | 121.5789 | .1399E-02 | .1253E-02 |
| .476 | 26.963 | .1042E+05 | 5.868 | 129.5 | 121.5 | 129.6250 | 121.4866 | .1216E-02 | .2524E-02 |
| .470 | 33.274 | .1030E+05 | 5.892 | 129.5 | 121.5 | 129.4164 | 121.4161 | .1288E-02 | .2082E-02 |
| .484 | 39.528 | .1019E+05 | 5.920 | 129.0 | 121.5 | 129.1749 | 121.3678 | .3077E-02 | .1784E-02 |
| | | | | | | | | | |
| .498 | 45.836 | .1022E+05 | 5.942 | 129.0 | 121.5 | 128.9657 | 121.3454 | .1501E-02 | .1370E-02 |
| .520 | 52.078 | .1034E+05 | 5.977 | 129.0 | 121.5 | 128.7582 | 121.3477 | .7646E-03 | .1703E-02 |
| .478 | 58.370 | .1263E+05 | 5.923 | 128.5 | 121.5 | 128.5464 | 121.3686 | .2053E-02 | .2040E-02 |
| .515 | 64.622 | .1270E+05 | 5.896 | 128.5 | 121.5 | 128.3460 | 121.4157 | .5495E-03 | .2111E-02 |
| .504 | 70.859 | .1274E+05 | 5.863 | 128.0 | 121.5 | 128.1234 | 121.4793 | .1389E-02 | .1604E-02 |
| .473 | 1.802 | .1290E+05 | 5.880 | 128.0 | 121.5 | 127.9082 | 121.5816 | .1415E-02 | .2152E-02 |
| .501 | 8.176 | .1205E+05 | 5.938 | 127.5 | 121.5 | 127.6972 | 121.6926 | .2421E-02 | .1145E-02 |
| .434 | 14.390 | .1229E+05 | 6.012 | 127.5 | 122.0 | 127.5315 | 121.8185 | .2102E-02 | .4145E-02 |
| .470 | 20.750 | .1221E+05 | 5.997 | 127.5 | 122.0 | 127.3959 | 121.9842 | .7944E-03 | .2045E-02 |
| .518 | 26.966 | .1250E+05 | 5.990 | 127.0 | 122.0 | 127.2139 | 122.1172 | .1822E-02 | .3761E-02 |
| | | | | | | | | | |
| .473 | 33.259 | .1251E+05 | 5.947 | 127.0 | 122.0 | 127.0692 | 122.3172 | .1567E-02 | .2343E-02 |
| .431 | 39.520 | .1188E+05 | 5.789 | 127.0 | 122.5 | 126.9769 | 122.4794 | .2216E-02 | .2267E-02 |
| .456 | 45.805 | .1197E+05 | 5.853 | 127.0 | 122.5 | 126.9066 | 122.6844 | .1985E-02 | .1251E-02 |
| .445 | 52.107 | .1262E+05 | 5.968 | 127.0 | 123.0 | 126.8265 | 122.8413 | .2172E-02 | .2703E-02 |
| .448 | 58.364 | .1276E+05 | 6.001 | 127.0 | 123.0 | 126.7570 | 123.0218 | .2498E-02 | .2456E-02 |
| .456 | 64.604 | .1294E+05 | 5.978 | 127.0 | 123.0 | 126.7439 | 123.3144 | .3021E-02 | .3819E-02 |
| .464 | 70.827 | .1300E+05 | 5.880 | 127.0 | 123.5 | 126.7569 | 123.5461 | .2427E-02 | .1305E-02 |
| .563 | 1.794 | .1339E+05 | 6.029 | 127.0 | 124.0 | 126.7905 | 123.7183 | .6276E-02 | .7689E-02 |
| .607 | 8.164 | .1320E+05 | 6.080 | 127.0 | 124.0 | 126.8225 | 123.9331 | .2697E-02 | .2144E-02 |
| .568 | 14.381 | .1307E+05 | 6.068 | 127.0 | 124.0 | 126.8739 | 124.1411 | .2243E-02 | .3431E-02 |
| | | | | | | | | | |
| .501 | 20.713 | .1228E+05 | 5.916 | 127.0 | 124.5 | 127.0095 | 124.3635 | .1466E-02 | .2589E-02 |
| .537 | 26.978 | .1228E+05 | 5.885 | 127.0 | 124.5 | 127.1121 | 124.5599 | .2056E-02 | .2888E-02 |
| .526 | 33.245 | .1211E+05 | 5.968 | 127.0 | 125.0 | 127.2272 | 124.7389 | .3089E-02 | .2747E-02 |
| .560 | 39.532 | .1184E+05 | 5.989 | 127.5 | 125.0 | 127.3651 | 124.9272 | .1006E-02 | .2790E-02 |
| .526 | 45.818 | .1184E+05 | 5.984 | 127.5 | 125.0 | 127.5136 | 125.0266 | .2019E-02 | .2117E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .515 | 52.077 | .1192E+05 | 5.985 | 127.5 | 125.0 | 127.6751 | 125.1358 | .1194E-02 | .1674E-02 |
| .484 | 58.364 | .1283E+05 | 5.974 | 128.0 | 125.0 | 127.9186 | 125.2824 | .2493E-02 | .1715E-02 |
| .484 | 64.600 | .1287E+05 | 5.924 | 128.0 | 125.5 | 128.1291 | 125.3694 | .1363E-02 | .1670E-02 |
| .473 | 70.870 | .1293E+05 | 5.914 | 128.5 | 125.5 | 128.3233 | 125.4424 | .2371E-02 | .2441E-02 |
| .520 | 1.801 | .1297E+05 | 5.891 | 128.5 | 125.5 | 128.5402 | 125.5026 | .8777E-03 | .1733E-02 |
| | | | | | | | | | |
| .476 | 8.173 | .1070E+05 | 5.931 | 129.0 | 125.5 | 128.7574 | 125.5458 | .2340E-02 | .2131E-02 |
| .473 | 14.359 | .1059E+05 | 5.917 | 129.0 | 125.5 | 128.9817 | 125.5655 | .1234E-02 | .2014E-02 |
| .487 | 20.746 | .1051E+05 | 5.908 | 129.0 | 125.5 | 129.2002 | 125.4880 | .2255E-02 | .1963E-02 |
| .462 | 26.956 | .1038E+05 | 5.936 | 129.5 | 125.5 | 129.4097 | 125.4497 | .8537E-03 | .2163E-02 |
| .425 | 33.261 | .1033E+05 | 5.945 | 129.5 | 125.5 | 129.6047 | 125.3884 | .2338E-02 | .1721E-02 |
| .456 | 39.536 | .1039E+05 | 6.010 | 130.0 | 125.5 | 129.8084 | 125.2892 | .3554E-02 | .1527E-02 |
| .464 | 45.806 | .1017E+05 | 5.981 | 130.0 | 125.0 | 129.9941 | 125.1549 | .1069E-02 | .3693E-02 |
| .490 | 52.073 | .1007E+05 | 5.977 | 130.0 | 125.0 | 130.1880 | 125.0235 | .2022E-02 | .2516E-02 |
| .506 | 58.375 | .9974E+04 | 5.991 | 130.5 | 125.0 | 130.3629 | 124.9097 | .1295E-02 | .1381E-02 |
| .495 | 64.613 | .1001E+05 | 5.979 | 130.5 | 125.0 | 130.4836 | 124.7071 | .1257E-02 | .2270E-02 |
| | | | | | | | | | |
| .467 | 70.834 | .1004E+05 | 5.877 | 130.5 | 124.5 | 130.6074 | 124.5611 | .1550E-02 | .2135E-02 |
| .484 | 1.784 | .1176E+05 | 5.928 | 131.0 | 124.5 | 130.7405 | 124.3685 | .1370E-01 | .1457E-02 |
| .537 | 8.161 | .1317E+05 | 6.082 | 131.0 | 124.0 | 130.7893 | 124.1377 | .1237E-02 | .1162E-02 |
| .577 | 14.365 | .1332E+05 | 6.088 | 131.0 | 124.0 | 130.8889 | 123.9229 | .1546E-02 | .4309E-02 |
| .529 | 20.727 | .1342E+05 | 6.061 | 131.0 | 124.0 | 130.9579 | 123.6789 | .3074E-02 | .4194E-02 |
| .366 | 26.976 | .1274E+05 | 5.905 | 131.0 | 123.5 | 130.9628 | 123.5093 | .1726E-02 | .2716E-02 |
| .442 | 33.245 | .1271E+05 | 5.998 | 131.0 | 123.0 | 130.9319 | 123.2752 | .1870E-02 | .2369E-02 |
| .408 | 39.512 | .1259E+05 | 6.029 | 131.0 | 123.0 | 130.9064 | 123.0162 | .2553E-02 | .2590E-02 |
| .422 | 45.809 | .1250E+05 | 5.987 | 131.0 | 123.0 | 130.8925 | 122.8353 | .2483E-02 | .3224E-02 |
| .492 | 52.078 | .1212E+05 | 5.868 | 131.0 | 122.5 | 130.8384 | 122.6486 | .1552E-01 | .3237E-01 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri | 3 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|---|
| 0 | .02665 | .01307 | .03121 | .00115 | .02335 | -.00331 | |
| 1 | -.00773 | -.00871 | -.00807 | -.01146 | -.01043 | -.01236 | |
| 2 | -.01265 | -.01825 | -.01269 | -.01867 | -.00701 | -.00899 | |
| 3 | -.03966 | .00836 | .01146 | .01272 | -.00556 | .02077 | |
| 4 | .04631 | .02370 | .01107 | -.00547 | .00409 | .01527 | |
| 5 | -.02123 | -.01225 | -.00064 | .02283 | -.00422 | -.01559 | |
| 6 | -.00535 | -.01938 | -.00903 | .01139 | .02679 | .00759 | |
| 7 | -.00549 | .00083 | .00375 | -.00435 | -.02720 | -.01735 | |
| 8 | .01726 | -.02645 | -.01073 | .00919 | -.03776 | -.00520 | |
| 9 | .01916 | .01058 | -.01637 | -.00660 | .02298 | .03207 | |

x0= 128.8592 y0= 123.4269 r0= 2.09461284 std.dev.= .01759082

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 4 | 10 | 22 | 23 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

TR8104

| | 1 | 2 | delta r1 | 4 | 5 | 7 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .02964 | | .03407 | .00393 | .02601 | .00117 |
| 1 | -.00532 | -.00646 | -.00599 | -.00958 | .00874 | -.01144 |
| 2 | -.01135 | -.01785 | -.01181 | -.01801 | -.00658 | -.00874 |
| 3 | -.03959 | .00825 | .01118 | .01231 | -.00610 | .07013 |
| 4 | .04559 | .02287 | .01019 | -.00639 | .00316 | .01434 |
| 5 | -.02213 | -.01309 | -.00141 | .02215 | -.00481 | -.01607 |
| 6 | -.00564 | -.01951 | -.00899 | .01162 | .02721 | .00821 |
| 7 | -.00466 | .00186 | .00498 | -.00291 | -.02555 | -.01550 |
| 8 | .01928 | -.02424 | -.00837 | | -.03511 | .00242 |
| 9 | .02203 | .01351 | -.01338 | -.00358 | .02602 | |

u0= 128.8573 v0= 123.4274 r0= 2.09356380 std.dev.= .01732696

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 3 | 11 | 17 | 25 | 3 |

ORIGINAL PAGE IS
OF POOR QUALITY

Disk 12-B

Track data file 15MTA06

NDR01
 Integration delay: .1160E+00
 Thresholds: .2298E+06

Coarse 1.0
 Fine 1.0
 Track 16.0

.4564E+00
 .9190E+05
 .1344E-02
 .7352E+06

Constants: .31700
 Displacements: 0.00000

.25500
 0.00000

.40600
 0.00000

.26500
 0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|-------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 9.860 | 58.364 | .4709E+05 | .761 | 131.0 | 122.5 | 130.7467 | 122.4685 | .8200E-03 | .1151E-02 |
| 9.924 | 64.583 | .8650E+05 | .926 | 130.5 | 122.0 | 130.6295 | 122.2859 | .5706E-03 | .2055E-02 |
| 9.874 | 70.848 | .8329E+05 | .967 | 130.5 | 122.0 | 130.4851 | 122.1057 | .4804E-03 | .4156E-02 |
| 9.834 | 1.792 | .8033E+05 | .972 | 130.5 | 122.0 | 130.3313 | 121.9799 | .9308E-03 | .1230E-02 |
| 9.868 | 8.165 | .9701E+05 | .989 | 130.0 | 122.0 | 130.1651 | 121.8058 | .1723E-02 | .1717E-02 |
| 9.857 | 14.379 | .9137E+05 | .913 | 130.0 | 121.5 | 129.9979 | 121.6861 | .1215E-02 | .2315E-02 |
| 9.862 | 20.720 | .9559E+05 | .874 | 130.0 | 121.5 | 129.8185 | 121.5815 | .6004E-03 | .4587E-03 |
| 9.865 | 26.953 | .7925E+05 | .814 | 129.5 | 121.5 | 129.5997 | 121.4905 | .1197E-02 | .1189E-02 |
| 9.879 | 33.245 | .6727E+05 | .843 | 129.5 | 121.5 | 129.3843 | 121.4236 | .6315E-03 | .7883E-03 |
| 9.848 | 39.544 | .6317E+05 | .886 | 129.0 | 121.5 | 129.1725 | 121.3728 | .3548E-03 | .1775E-02 |
| 9.837 | 45.814 | .6772E+05 | 1.011 | 129.0 | 121.0 | 128.9458 | 121.3420 | .1195E-02 | .2603E-02 |
| 9.890 | 52.074 | .7631E+05 | 1.037 | 129.0 | 121.0 | 128.7414 | 121.3499 | .4179E-03 | .3113E-02 |
| 9.868 | 58.356 | .6273E+05 | .856 | 128.5 | 121.5 | 128.5394 | 121.3826 | .5554E-03 | .1323E-02 |
| 9.876 | 64.568 | .6593E+05 | .834 | 128.5 | 121.5 | 128.3332 | 121.4260 | .4478E-03 | .6121E-03 |
| 9.876 | 70.712 | .7805E+05 | .830 | 128.0 | 121.5 | 128.1037 | 121.4904 | .6422E-03 | .1250E-02 |
| 9.843 | 70.805 | .7797E+05 | .838 | 128.0 | 121.5 | 128.0998 | 121.4908 | .1534E-02 | .1254E-02 |
| 9.857 | 1.795 | .8920E+05 | .852 | 128.0 | 121.5 | 127.8729 | 121.5999 | .8129E-03 | .4185E-03 |
| 9.871 | 8.177 | .9324E+05 | .941 | 127.5 | 122.0 | 127.6910 | 121.6499 | .5073E-03 | .9376E-03 |
| 9.871 | 14.379 | .8310E+05 | .972 | 127.5 | 122.0 | 127.5212 | 121.8167 | .4629E-03 | .1706E-02 |
| 9.846 | 20.747 | .8304E+05 | .973 | 127.5 | 122.0 | 127.3775 | 121.9880 | .1567E-02 | .1750E-02 |
| 9.888 | 26.982 | .1011E+06 | .989 | 127.0 | 122.0 | 127.2096 | 122.1362 | .1152E-02 | .9429E-02 |
| 9.817 | 33.275 | .1007E+06 | .943 | 127.0 | 122.0 | 127.0756 | 122.3410 | .9506E-03 | .6505E-03 |
| 9.789 | 39.513 | .5197E+05 | .770 | 127.0 | 122.5 | 126.9703 | 122.4817 | .1075E-02 | .6395E-03 |
| 9.837 | 45.751 | .7026E+05 | .896 | 127.0 | 123.0 | 126.8953 | 122.6352 | .8458E-03 | .1305E-02 |
| 9.832 | 52.087 | .9198E+05 | .959 | 127.0 | 123.0 | 126.8278 | 122.8641 | .8622E-03 | .5463E-03 |
| 9.792 | 58.302 | .1037E+06 | .993 | 127.0 | 123.0 | 126.7672 | 122.0491 | .1204E-02 | .1069E-02 |
| 9.832 | 64.588 | .1144E+06 | .949 | 127.0 | 123.0 | 126.7563 | 122.3368 | .9579E-03 | .2113E-02 |
| 9.795 | 70.845 | .1213E+06 | .815 | 127.0 | 123.5 | 126.7665 | 123.5495 | .1154E-02 | .1013E-02 |
| 9.916 | 1.830 | .1358E+06 | .964 | 127.0 | 124.0 | 126.8097 | 123.7514 | .1013E-02 | .9220E-03 |
| 9.913 | 8.199 | .1206E+06 | 1.044 | 127.0 | 124.0 | 126.8457 | 123.9741 | .8701E-03 | .3964E-03 |
| 9.933 | 14.372 | .1113E+06 | 1.036 | 127.0 | 124.0 | 126.9014 | 124.1747 | .1253E-02 | .1386E-02 |
| 9.898 | 20.752 | .7379E+05 | .872 | 127.0 | 124.5 | 127.0150 | 124.3636 | .4140E-03 | .9174E-03 |
| 9.879 | 26.986 | .7404E+05 | .839 | 127.0 | 124.5 | 127.1188 | 124.5663 | .6444E-03 | .4981E-03 |
| 9.865 | 33.265 | .4971E+05 | .945 | 127.0 | 125.0 | 127.2890 | 124.7191 | .1304E-02 | .1333E-02 |
| 9.876 | 39.556 | .4836E+05 | .959 | 127.5 | 125.0 | 127.3431 | 124.9234 | .1105E-02 | .9553E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

TR81-04

| | | | | | | | | | |
|-------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 9.86 | 45. | .5631E+05 | .965 | 127.5 | 125.0 | 127.6829 | 125.1500 | .1314E-01 | .571E-02 |
| 9.890 | 52.088 | .6976E+05 | .970 | 128.0 | 125.0 | 127.9102 | 125.3015 | .1065E-01 | .1807E-02 |
| 9.867 | 58.368 | .7377E+05 | .898 | 128.0 | 125.5 | 128.1167 | 125.3510 | .9704E-03 | .6772E-03 |
| 9.820 | 64.612 | .7565E+05 | .848 | 128.5 | 125.5 | 128.3055 | 125.4305 | .985E-03 | .8464E-03 |
| 9.865 | 70.823 | | | | | | | | |
| 9.882 | 1.826 | .8364E+05 | .818 | 128.5 | 125.5 | 128.5298 | 125.4972 | .1377E-02 | .2024E-03 |
| 9.865 | 8.166 | .9902E+05 | .873 | 129.0 | 125.5 | 128.7660 | 125.5336 | .8578E-03 | .9143E-03 |
| 9.893 | 14.377 | .9104E+05 | .871 | 129.0 | 125.5 | 128.9874 | 125.5166 | .9451E-03 | .1175E-02 |
| 9.876 | 20.757 | .8675E+05 | .859 | 129.0 | 125.5 | 129.2096 | 125.4784 | .9614E-03 | .1067E-02 |
| 9.809 | 26.972 | .7866E+05 | .864 | 129.5 | 125.5 | 129.3961 | 125.4369 | .1135E-02 | .6821E-03 |
| 9.846 | 33.263 | .7620E+05 | .873 | 129.5 | 125.5 | 129.6004 | 125.3742 | .7644E-03 | .1274E-02 |
| 9.840 | 39.555 | .7773E+05 | .982 | 130.0 | 125.0 | 129.7973 | 125.3336 | .2021E-03 | .2344E-02 |
| 9.876 | 45.836 | .5853E+05 | .987 | 130.0 | 125.0 | 129.9934 | 125.1742 | .2859E-02 | .1571E-02 |
| 9.851 | 52.113 | .4852E+05 | .972 | 130.0 | 125.0 | 130.1961 | 125.0437 | .1820E-02 | .1372E-02 |
| 9.848 | 58.380 | .4808E+05 | .955 | 130.5 | 125.0 | 130.3464 | 124.9112 | .6538E-03 | .9554E-03 |
| 9.885 | 64.618 | .5352E+05 | .926 | 130.5 | 125.0 | 130.4659 | 124.6991 | .1594E-02 | .3190E-02 |
| 9.916 | 70.869 | .7577E+05 | .810 | 130.5 | 124.5 | 130.6037 | 124.5625 | .6233E-03 | .1434E-02 |
| 9.876 | 1.831 | .7597E+05 | .876 | 131.0 | 124.5 | 130.7337 | 124.3610 | .7445E-03 | .1091E-02 |
| 9.927 | 8.157 | .1170E+06 | 1.020 | 131.0 | 124.0 | 130.7993 | 124.1558 | .6552E-03 | .2342E-02 |
| 9.938 | 14.356 | .1251E+06 | 1.016 | 131.0 | 124.0 | 130.8948 | 123.9451 | .8672E-03 | .1925E-02 |
| 9.910 | 20.728 | .1342E+06 | .970 | 131.0 | 124.0 | 130.9572 | 123.7057 | .9872E-03 | .1981E-02 |
| 9.767 | 26.972 | .1152E+06 | .834 | 131.0 | 123.5 | 130.9663 | 123.5105 | .1691E-02 | .2077E-02 |
| 9.843 | 33.274 | .1093E+06 | .977 | 131.0 | 123.0 | 130.9507 | 123.3038 | .8432E-03 | .1925E-02 |
| 9.809 | 39.531 | .1003E+06 | 1.019 | 131.0 | 123.0 | 130.9182 | 123.0528 | .9157E-03 | .1554E-02 |
| 9.871 | 45.818 | .9091E+05 | .965 | 131.0 | 123.0 | 130.8986 | 122.8620 | .5105E-03 | .1514E-02 |

ORIGINAL PAGE IS
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| | 1 | 2 | delta r i 3 | 4 | 5 | 6 |
|---|---------|---------|----------------|---------|---------|----------|
| 0 | .02757 | .01706 | .00614 | -.02456 | -.00692 | -.006133 |
| 1 | -.00855 | -.01510 | -.01714 | -.01017 | -.00131 | -.00770 |
| 2 | -.01886 | -.01917 | -.00941 | -.00636 | -.01186 | -.03336 |
| 3 | .00529 | -.02299 | .00596 | -.00956 | .02336 | .02851 |
| 4 | .01872 | .03651 | .01272 | .00646 | -.01487 | -.00631 |
| 5 | .00524 | -.02212 | -.01058 | -.01852 | .02074 | -.00534 |
| 6 | -.01389 | .00956 | -.02928 | -.01305 | .00450 | .01691 |
| 7 | .00170 | -.01064 | -.01140 | -.00825 | .03318 | .00531 |
| 8 | .00634 | .00968 | -.04194 | -.00963 | .00323 | -.01833 |
| 9 | .00999 | .02604 | .01850 | .00499 | .00291 | .07552 |

$\mu_0 = 129.8595$
 $\mu_0 = 123.4283$
 $\mu_0 = 2.08994412$
 std.dev. = .01724499

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 3 | 10 | 19 | 27 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

ORIGINAL PAGE IS
OF POOR QUALITY

TR21-84

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .02775 | .01727 | .00636 | .02432 | .00667 | .00891 |
| 1 | -.00831 | -.01486 | -.01692 | -.00907 | -.00114 | -.00775 |
| 2 | -.01874 | -.01909 | -.00937 | -.00833 | -.01150 | -.02131 |
| 3 | .00519 | -.02314 | .00575 | -.00062 | .02305 | .02317 |
| 4 | .01832 | .03608 | .01202 | .00592 | .01544 | .00000 |
| 5 | .00460 | -.02279 | -.01127 | .01913 | .02402 | .00646 |
| 6 | | .00884 | .03000 | -.01376 | .00392 | .01675 |
| 7 | .00107 | -.01123 | -.01197 | -.00877 | .01269 | .00000 |
| 8 | .00176 | .00934 | -.04222 | -.00986 | .00310 | .01847 |
| 9 | .00382 | .02601 | .01851 | .00505 | .00301 | .02744 |

x0= 128.8592 y0= 123.4292 r0= 2.00018540 std.dev.= .01729229

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 3 | 10 | 17 | 28 | 1 |

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| NRRO: | 1.0 | 1.0 | 64.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .1338E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .31700 | .25500 | .40600 | .26500 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|-------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 9.843 | 58.373 | .1597E+05 | 2.558 | 131.0 | 122.5 | 130.7382 | 122.4718 | .2131E-02 | .1775E-02 |
| 9.874 | 64.614 | .2501E+05 | 2.727 | 130.5 | 122.0 | 130.6142 | 122.2796 | .9196E-03 | .1240E-02 |
| 9.848 | 70.866 | .2441E+05 | 2.764 | 130.5 | 122.0 | 130.4716 | 122.1043 | .9930E-03 | .9337E-03 |
| 9.865 | 1.787 | .2391E+05 | 2.770 | 130.5 | 122.0 | 130.3220 | 121.9795 | .7402E-03 | .1054E-02 |
| 9.916 | 8.155 | .2764E+05 | 2.782 | 130.0 | 122.0 | 130.1560 | 121.8053 | .1595E-02 | .3150E-02 |
| 9.916 | 14.389 | .2553E+05 | 2.714 | 130.0 | 121.5 | 129.9822 | 121.6868 | .1135E-02 | .1805E-02 |
| 9.871 | 20.717 | .2675E+05 | 2.677 | 130.0 | 121.5 | 129.8026 | 121.5839 | .3370E-02 | .1670E-02 |
| 9.846 | 26.955 | .2266E+05 | 2.623 | 129.5 | 121.5 | 129.5876 | 121.4947 | .1365E-02 | .5054E-03 |
| 9.848 | 33.230 | .2039E+05 | 2.651 | 129.5 | 121.5 | 129.3787 | 121.4269 | .1480E-02 | .2345E-03 |
| 9.888 | 39.524 | .2019E+05 | 2.683 | 129.0 | 121.5 | 129.1589 | 121.3846 | .1379E-02 | .1782E-02 |
| | | | | | | | | | |
| 9.882 | 45.814 | .2617E+05 | 2.773 | 129.0 | 121.5 | 128.9543 | 121.3446 | .1894E-01 | .8359E-02 |
| 9.871 | 52.072 | .2266E+05 | 2.734 | 129.0 | 121.5 | 128.7502 | 121.3624 | .6945E-03 | .2184E-02 |
| 9.885 | 58.358 | .2003E+05 | 2.664 | 128.5 | 121.5 | 128.5269 | 121.3893 | .1533E-02 | .1506E-02 |
| 9.885 | 64.552 | .2069E+05 | 2.642 | 128.5 | 121.5 | 128.3274 | 121.4344 | .1231E-02 | .9954E-03 |
| 9.854 | 70.862 | .2304E+05 | 2.638 | 128.0 | 121.5 | 128.0868 | 121.4984 | .5468E-03 | .8079E-03 |
| 9.865 | 1.827 | .2535E+05 | 2.656 | 128.0 | 121.5 | 127.8658 | 121.6003 | .7876E-03 | .8382E-03 |
| 9.871 | 8.150 | .3194E+05 | 2.777 | 127.5 | 122.0 | 127.6933 | 121.6232 | .3070E-01 | .5526E-01 |
| 9.860 | 14.385 | .2470E+05 | 2.778 | 127.5 | 122.0 | 127.5152 | 121.8204 | .8700E-03 | .1754E-02 |
| 9.860 | 20.731 | .2444E+05 | 2.770 | 127.5 | 122.0 | 127.3745 | 121.9891 | .6531E-03 | .5448E-03 |
| 9.817 | 26.970 | .2799E+05 | 2.774 | 127.0 | 122.0 | 127.1987 | 122.1329 | .2073E-02 | .1534E-02 |
| | | | | | | | | | |
| 9.871 | 33.241 | .2805E+05 | 2.735 | 127.0 | 122.0 | 127.0667 | 122.3409 | .1068E-02 | .9388E-03 |
| 9.820 | 39.540 | .1708E+05 | 2.567 | 127.0 | 122.5 | 126.9649 | 122.4892 | .1520E-02 | .1084E-02 |
| 9.761 | 45.821 | .2139E+05 | 2.690 | 127.0 | 123.0 | 126.8917 | 122.6420 | .8703E-03 | .8127E-03 |
| 9.803 | 52.086 | .2565E+05 | 2.744 | 127.0 | 123.0 | 126.8219 | 122.8659 | .1910E-02 | .1173E-02 |
| 9.820 | 58.358 | .2825E+05 | 2.779 | 127.0 | 123.0 | 126.7598 | 123.0513 | .1468E-02 | .1095E-02 |
| 9.857 | 64.613 | .3067E+05 | 2.741 | 127.0 | 123.0 | 126.7575 | 123.3395 | .1212E-02 | .2884E-02 |
| 9.826 | 70.869 | .3154E+05 | 2.622 | 127.0 | 123.5 | 126.7598 | 123.5585 | .1628E-02 | .7035E-03 |
| 9.949 | 1.795 | .3568E+05 | 2.766 | 127.0 | 124.0 | 126.8049 | 123.7559 | .1857E-02 | .2553E-02 |
| 9.874 | 8.166 | .3246E+05 | 2.836 | 127.0 | 124.0 | 126.8384 | 123.9621 | .7210E-03 | .7435E-03 |
| 9.885 | 14.372 | .3030E+05 | 2.818 | 127.0 | 124.0 | 126.8928 | 124.1746 | .1171E-02 | .9347E-03 |
| | | | | | | | | | |
| 9.848 | 20.739 | .2148E+05 | 2.661 | 127.0 | 124.5 | 127.0096 | 124.3732 | .1088E-02 | .8945E-03 |
| 9.882 | 26.959 | .2126E+05 | 2.633 | 127.0 | 124.5 | 127.1107 | 124.5678 | .9643E-03 | .9345E-03 |
| 9.865 | 33.256 | .1728E+05 | 2.738 | 127.0 | 125.0 | 127.2331 | 124.7274 | .6214E-03 | .1031E-02 |
| 9.829 | 39.536 | .1658E+05 | 2.755 | 127.5 | 125.0 | 127.3476 | 124.9208 | .1093E-02 | .2111E-02 |
| 9.809 | 45.831 | .1672E+05 | 2.752 | 127.5 | 125.0 | 127.5194 | 125.0791 | .6347E-03 | .1198E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|-------|--------|-----------|-------|-------|---------|----------|----------|-----------|-----------|
| 9.841 | 52.361 | .2183E+05 | 2.757 | 128.0 | 125.0 | 127.9022 | 125.1999 | .3184E-03 | .1103E-02 |
| 9.848 | 58.364 | .2229E+05 | 2.683 | 128.0 | 125.5 | 128.1103 | 125.3604 | .4153E-03 | .2415E-02 |
| 9.874 | 64.624 | .2249E+05 | 2.655 | 128.5 | 125.5 | 128.3056 | 125.4365 | .1329E-02 | .1700E-02 |
| 9.851 | 70.838 | .2394E+05 | 2.630 | 128.5 | 125.5 | 128.5227 | 125.5035 | .1815E-02 | .5590E-02 |
| 9.834 | 8.193 | .2714E+05 | 2.672 | 129.0 | 125.5 | 128.7522 | 125.5398 | .8325E-03 | .7452E-03 |
| 9.882 | 14.362 | .2561E+05 | 2.672 | 129.0 | 125.5 | 128.9795 | 125.5217 | .7406E-03 | .1106E-02 |
| 9.888 | 20.727 | .2443E+05 | 2.659 | 129.0 | 125.5 | 129.2010 | 125.4840 | .1527E-02 | .1464E-02 |
| 9.862 | 26.950 | .2267E+05 | 2.672 | 129.5 | 125.5 | 129.3954 | 125.4441 | .7332E-03 | .1226E-02 |
| 9.851 | 33.261 | .2229E+05 | 2.682 | 129.5 | 125.5 | 129.5935 | 125.3841 | .9638E-03 | .1103E-02 |
| 9.882 | 39.540 | .2289E+05 | 2.799 | 130.0 | 125.5 * | 129.8007 | 125.2885 | .8819E-02 | .3950E-01 |
| 9.857 | 45.815 | .1925E+05 | 2.767 | 130.0 | 125.0 | 129.9899 | 125.1702 | .9008E-03 | .1752E-02 |
| 9.879 | 52.084 | .1694E+05 | 2.754 | 130.0 | 125.0 | 130.1871 | 125.0360 | .9920E-03 | .1392E-02 |
| 9.862 | 58.370 | .1655E+05 | 2.749 | 130.5 | 125.0 | 130.3469 | 124.9154 | .9149E-03 | .1155E-02 |
| 9.879 | 64.613 | .1760E+05 | 2.727 | 130.5 | 125.0 | 130.4696 | 124.7084 | .5220E-03 | .1149E-02 |
| 9.871 | 70.870 | .2169E+05 | 2.622 | 130.5 | 124.5 | 130.6014 | 124.5681 | .9120E-03 | .6180E-03 |
| 9.865 | 1.795 | .2149E+05 | 2.670 | 131.0 | 124.5 | 130.7415 | 124.3698 | .1441E-02 | .1267E-02 |
| 9.921 | 8.197 | .3160E+05 | 2.809 | 131.0 | 124.0 | 130.8027 | 124.1535 | .1082E-02 | .1130E-02 |
| 9.846 | 14.363 | .3315E+05 | 2.810 | 131.0 | 124.0 | 130.8976 | 123.9404 | .1710E-02 | .1428E-02 |
| 9.868 | 20.726 | .3532E+05 | 2.772 | 131.0 | 124.0 | 130.9640 | 123.7089 | .6165E-03 | .1144E-02 |
| 9.823 | 26.969 | .2988E+05 | 2.635 | 131.0 | 123.5 | 130.9692 | 123.5146 | .9104E-03 | .1076E-02 |
| 9.778 | 33.256 | .2879E+05 | 2.759 | 131.0 | 123.0 | 130.9564 | 123.3062 | .5721E-03 | .2202E-02 |
| 9.784 | 39.547 | .2687E+05 | 2.799 | 131.0 | 123.0 | 130.9243 | 123.0466 | .1705E-02 | .4116E-03 |
| 9.792 | 45.812 | .2523E+05 | 2.751 | 131.0 | 123.0 | 130.9040 | 122.8594 | .2184E-02 | .9757E-03 |
| 9.812 | 52.074 | .2087E+05 | 2.633 | 131.0 | 122.5 * | 130.8381 | 122.6665 | .1138E-01 | .2763E-01 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .02077 | .00993 | -.00115 | -.02860 | -.01002 | -.01527 |
| 1 | -.01597 | -.02157 | -.02030 | -.02272 | -.00267 | -.02005 |
| 2 | -.02333 | -.02603 | -.01125 | -.00999 | .05809 | .00426 |
| 3 | -.02400 | .01382 | .00383 | .02128 | .02539 | .01267 |
| 4 | .03881 | .01402 | .00851 | -.01493 | -.00528 | .00764 |
| 5 | -.01884 | -.00887 | -.01467 | .01410 | -.00842 | -.01549 |
| 6 | .00720 | -.02348 | -.01226 | .00718 | .01900 | .00228 |
| 7 | -.01030 | -.00801 | -.00439 | -.00813 | -.01592 | -.00694 |
| 8 | .01174 | -.03404 | -.00893 | .01420 | -.01552 | .01271 |
| 9 | .03423 | .02289 | .01221 | .01185 | .03445 | .03264 |

x0= 128.8562 y0= 123.4313 r0= 2.09172463 std.dev.= .01916037

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 0 | 5 | 13 | 22 | 19 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .02328 | .01270 | .00185 | -.02542 | -.00663 | -.01181 |
| 1 | -.01226 | -.01773 | -.01636 | -.01871 | | -.01598 |
| 2 | -.01927 | -.02200 | -.00730 | -.00615 | | -.00784 |
| 3 | -.02059 | .01703 | .00681 | .02408 | .02800 | .02202 |
| 4 | .04094 | .01580 | .01802 | -.01367 | -.00427 | .00837 |
| 5 | -.01836 | -.00863 | -.01454 | .01391 | -.00879 | -.01601 |
| 6 | .00649 | -.02432 | -.01319 | .00617 | .01794 | .00120 |
| 7 | -.01136 | -.00904 | -.00535 | | -.01667 | -.00753 |
| 8 | .01130 | -.03427 | -.00897 | .01440 | -.01508 | .01292 |
| 9 | .03522 | .02411 | .01370 | .01365 | .03648 | |

$\mu_0 = 128.8564$ $\mu = 123.4339$ $r_0 = 2.09022737$ $\text{std. dev.} = .01752524$

HISTOGRAM DEVIATION $\geq e$ •

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 1 | 3 | 9 | 26 | 17 | 4 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | Coarse | Fine | Track |
|--------------------|-----------|-----------|-----------|
| NDRO: | 1.0 | 1.0 | 192.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .7974E+00 |
| Thresholds: | .183E+06 | .9190E+05 | .7352E+06 |

| | .31700 | .25500 | .40600 | .26500 |
|----------------|---------|---------|---------|---------|
| Constants: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| Displacements: | | | | |

| temp | angle | dark | star | reference | | position | | standard deviation | |
|-------|--------|-----------|-------|-----------|-------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| 9.787 | 58.367 | .2530E+05 | 5.688 | 131.0 | 122.5 | 130.7496 | 122.4579 | .2186E-02 | .1346E-02 |
| 9.829 | 64.628 | .2299E+05 | 5.879 | 130.5 | 122.0 | 130.6175 | 122.2406 | .1157E-01 | .5455E-01 |
| 9.851 | 70.820 | .2248E+05 | 5.863 | 130.5 | 122.0 | 130.4951 | 122.0393 | .3659E-02 | .4223E-02 |
| 9.829 | 1.816 | .2251E+05 | 5.869 | 130.5 | 122.0 | 130.3481 | 121.9227 | .1489E-02 | .6183E-02 |
| 9.843 | 8.172 | .2289E+05 | 5.891 | 130.0 | 122.0 | 130.1871 | 121.7470 | .9631E-03 | .1342E-02 |
| 9.843 | 14.375 | .2327E+05 | 5.879 | 130.0 | 121.5 | 130.0149 | 121.6833 | .3803E-02 | .1921E-02 |
| 9.837 | 20.726 | .2329E+05 | 5.851 | 130.0 | 121.5 | 129.8301 | 121.5758 | .2174E-02 | .1159E-02 |
| 9.823 | 26.954 | .2295E+05 | 5.813 | 129.5 | 121.5 | 129.6308 | 121.4786 | .2200E-02 | .2346E-02 |
| 9.834 | 33.258 | .2288E+05 | 5.842 | 129.5 | 121.5 | 129.4204 | 121.4104 | .2075E-02 | .3970E-02 |
| 9.823 | 39.522 | .2261E+05 | 5.871 | 129.0 | 121.5 | 129.1626 | 121.3548 | .2538E-02 | .1278E-02 |
| 9.812 | 45.811 | .2263E+05 | 5.890 | 129.0 | 121.5 | 128.9473 | 121.3402 | .4506E-02 | .2751E-02 |
| 9.904 | 52.069 | .2290E+05 | 5.922 | 129.0 | 121.5 | 128.7376 | 121.3456 | .2300E-02 | .1213E-02 |
| 9.820 | 58.355 | .2324E+05 | 5.861 | 128.5 | 121.5 | 128.5253 | 121.3669 | .2439E-02 | .1188E-02 |
| 9.876 | 64.580 | .2629E+05 | 5.836 | 128.5 | 121.5 | 128.3219 | 121.4136 | .2155E-02 | .1436E-02 |
| 9.879 | 70.866 | .2642E+05 | 5.804 | 128.0 | 121.5 | 128.1010 | 121.4853 | .1832E-02 | .1969E-02 |
| 9.899 | 1.790 | .2660E+05 | 5.820 | 128.0 | 121.5 | 127.8810 | 121.5879 | .2828E-02 | .1918E-02 |
| 9.868 | 8.167 | .2566E+05 | 5.875 | 127.5 | 121.5 | 127.6821 | 121.6988 | .2306E-02 | .3843E-03 |
| 9.851 | 14.376 | .2582E+05 | 5.945 | 127.5 | 122.0 | 127.5150 | 121.8229 | .1440E-02 | .3577E-02 |
| 9.860 | 20.717 | .2573E+05 | 5.931 | 127.5 | 122.0 | 127.3774 | 121.9879 | .1902E-02 | .3297E-02 |
| 9.840 | 26.954 | .2595E+05 | 5.906 | 127.0 | 122.0 | 127.1693 | 122.1086 | .2818E-02 | .5134E-02 |
| 9.874 | 33.236 | .2595E+05 | 5.870 | 127.0 | 122.0 | 127.0347 | 122.3192 | .2488E-02 | .3850E-02 |
| 9.733 | 39.542 | .2546E+05 | 5.727 | 127.0 | 122.5 | 126.9540 | 122.4976 | .3556E-02 | .1303E-02 |
| 9.775 | 45.807 | .2601E+05 | 5.852 | 127.0 | 123.0 | 126.8780 | 122.6435 | .5061E-02 | .8044E-01 |
| 9.745 | 52.099 | .2640E+05 | 5.915 | 127.0 | 123.0 | 126.7987 | 122.8455 | .1898E-02 | .2704E-02 |
| 9.756 | 58.385 | .2652E+05 | 5.948 | 127.0 | 123.0 | 126.7364 | 123.0376 | .6594E-03 | .2615E-02 |
| 9.795 | 64.592 | .2694E+05 | 5.938 | 127.0 | 123.0 | 126.7307 | 123.3208 | .7529E-02 | .3223E-01 |
| 9.761 | 70.866 | .2675E+05 | 5.829 | 127.0 | 123.5 | 126.7395 | 123.5591 | .3194E-02 | .2540E-02 |
| 9.876 | 1.805 | .2709E+05 | 5.965 | 127.0 | 124.0 | 126.7633 | 123.7028 | .7087E-02 | .1113E-01 |
| 9.854 | 8.161 | .2686E+05 | 6.016 | 127.0 | 124.0 | 126.7996 | 123.9126 | .4341E-02 | .2205E-02 |
| 9.919 | 14.391 | .2672E+05 | 6.003 | 127.0 | 124.0 | 126.8594 | 124.1265 | .3363E-02 | .4267E-02 |
| 9.834 | 20.731 | .2589E+05 | 5.845 | 127.0 | 124.5 | 127.0056 | 124.3668 | .1219E-02 | .2476E-02 |
| 9.823 | 26.960 | .2591E+05 | 5.821 | 127.0 | 124.5 | 127.1111 | 124.5631 | .2060E-02 | .1048E-02 |
| 9.809 | 33.249 | .2566E+05 | 5.900 | 127.0 | 125.0 | 127.2223 | 124.7500 | .3890E-02 | .1770E-02 |
| 9.832 | 39.531 | .2529E+05 | 5.910 | 127.5 | 125.0 | 127.3609 | 124.9341 | .2167E-02 | .4992E-02 |
| 9.846 | 45.804 | .2526E+05 | 5.903 | 127.5 | 125.0 | 127.5064 | 125.0296 | .2712E-02 | .2750E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | | | | | | | | | |
|-------|--------|-----------|-------|-------|---------|----------|----------|-----------|-----------|
| 9.85 | 52.000 | .2626E+05 | 5.907 | 128.0 | 125.0 | 127.9029 | 125.1427 | .1918E-02 | .2340E-02 |
| 9.834 | 58.337 | .2626E+05 | 5.902 | 128.0 | 125.0 | 127.9204 | 125.2959 | .1918E-02 | .2340E-02 |
| 9.829 | 64.593 | .2631E+05 | 5.854 | 128.0 | 125.5 | 128.1382 | 125.3655 | .2816E-02 | .2097E-02 |
| 9.806 | 70.856 | .2650E+05 | 5.852 | 128.5 | 125.5 | 128.3216 | 125.4445 | .2265E-02 | .1654E-02 |
| 9.806 | 1.805 | .2651E+05 | 5.825 | 128.5 | 125.5 | 128.5421 | 125.5092 | .1383E-02 | .1930E-02 |
| 9.792 | 8.181 | .2330E+05 | 5.869 | 129.0 | 125.5 | 128.7385 | 125.5542 | .1320E-02 | .2794E-02 |
| 9.823 | 14.368 | .2320E+05 | 5.854 | 129.0 | 125.5 | 128.9649 | 125.5298 | .7823E-02 | .2883E-02 |
| 9.871 | 20.729 | .2314E+05 | 5.847 | 129.0 | 125.5 | 129.1878 | 125.4910 | .7001E-03 | .1269E-02 |
| 9.826 | 26.959 | .2296E+05 | 5.874 | 129.5 | 125.5 | 129.4023 | 125.4489 | .2179E-02 | .1803E-02 |
| 9.784 | 33.242 | .2294E+05 | 5.883 | 129.5 | 125.5 | 129.5964 | 125.3875 | .1611E-02 | .1379E-02 |
| 9.798 | 39.522 | .2291E+05 | 5.953 | 130.0 | 125.5 | 129.7978 | 125.2825 | .3070E-02 | .1584E-02 |
| 9.888 | 45.823 | .2272E+05 | 5.928 | 130.0 | 125.0 | 129.9810 | 125.1621 | .1489E-02 | .2044E-02 |
| 9.826 | 52.078 | .2254E+05 | 5.915 | 130.0 | 125.0 | 130.1755 | 125.0289 | .2836E-02 | .4247E-02 |
| 9.944 | 58.364 | .2252E+05 | 5.937 | 130.5 | 125.0 | 130.3476 | 124.9170 | .2492E-02 | .1631E-02 |
| 9.860 | 64.612 | .2257E+05 | 5.922 | 130.5 | 125.0 | 130.4697 | 124.7064 | .2155E-02 | .1698E-02 |
| 9.896 | 70.837 | .2237E+05 | 5.795 | 130.5 | 124.5 | 130.5872 | 124.5616 | .2621E-02 | .2646E-02 |
| 9.871 | 1.802 | .2248E+05 | 5.839 | 130.5 | 124.5 | 130.6973 | 124.3712 | .2739E-02 | .2158E-02 |
| 9.927 | 8.158 | .2714E+05 | 6.029 | 131.0 | 124.0 | 130.7400 | 124.1345 | .3884E-02 | .3811E-02 |
| 9.919 | 14.394 | .2723E+05 | 6.029 | 131.0 | 124.0 | 130.8389 | 123.9094 | .3019E-02 | .4546E-02 |
| 9.852 | 20.726 | .2738E+05 | 6.001 | 131.0 | 124.0 | 130.9115 | 123.6695 | .6304E-02 | .2333E-02 |
| 9.854 | 26.946 | .2660E+05 | 5.839 | 131.0 | 123.5 | 130.9167 | 123.5253 | .1292E-02 | .1820E-02 |
| 9.809 | 33.249 | .2656E+05 | 5.926 | 131.0 | 123.0 * | 130.8895 | 123.2887 | .9153E-02 | .4571E-02 |
| 9.803 | 39.529 | .2645E+05 | 5.956 | 131.0 | 123.0 | 130.8573 | 123.0207 | .9443E-03 | .2372E-02 |
| 9.865 | 45.820 | .2637E+05 | 5.917 | 131.0 | 123.0 | 130.8369 | 122.8379 | .1142E-02 | .5271E-02 |
| 9.848 | 52.090 | .2591E+05 | 5.795 | 131.0 | 122.5 * | 130.7967 | 122.6598 | .2141E-01 | .3298E-01 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri | 3 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|---|
| 0 | .04585 | .04064 | .06274 | .03229 | .05492 | .00359 | |
| 1 | -.00020 | .00277 | -.00199 | -.00383 | -.01172 | .01754 | |
| 2 | -.01768 | -.02278 | -.02415 | -.02753 | .02118 | -.02065 | |
| 3 | -.04906 | .02774 | .01815 | .00306 | .01361 | .02137 | |
| 4 | .04140 | .01492 | .00838 | -.00060 | .00239 | .00627 | |
| 5 | -.03220 | -.02372 | -.00203 | .02057 | -.00563 | -.01212 | |
| 6 | -.00631 | -.02708 | -.00521 | .01554 | .04202 | .01813 | |
| 7 | .00589 | .01146 | .01815 | -.00139 | -.01077 | -.00212 | |
| 8 | .03167 | -.01652 | -.00553 | -.00580 | -.06250 | -.03433 | |
| 9 | -.00579 | -.01289 | -.03849 | -.03578 | -.01229 | .00620 | |

x0= 129.8378 y0= 123.4201 r0= 2.09445834 std.dev.= .02486158

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 3 | 5 | 6 | 10 | 15 | 21 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri | 3 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|---------|
| 0 | .04820 | | | .06524 | .03483 | .05751 | .00620 |
| 1 | .00243 | .00539 | | .00062 | -.00125 | -.00918 | .01504 |
| 2 | -.01525 | -.02042 | | -.02188 | -.02537 | -.01913 | -.01871 |
| 3 | -.04724 | .02943 | | .01969 | .00449 | | .02518 |
| 4 | .04249 | | | .00919 | | .00302 | .00030 |
| 5 | -.03178 | -.02338 | | -.00175 | .02079 | -.00549 | -.01305 |
| 6 | -.00616 | -.02693 | | -.00505 | .01573 | .04225 | .01941 |
| 7 | .00624 | .01189 | | .01466 | -.00078 | -.01005 | -.00128 |
| 8 | .03261 | -.01544 | | -.00434 | -.00448 | -.06104 | -.03272 |
| 9 | -.00404 | -.01106 | | -.03653 | -.03368 | -.01010 | |

x0= 128.8373 y0= 123.4212 r0= 2.09307170 std.dev.= .02515172

HISTOGRAM DEVIATION > 2

| | | | | | | | |
|---|-----|-----|-----|-----|-----|------|------------|
| = | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 3 | 4 | 6 | 8 | 14 | 20 | 5 |

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Disk 12-B Track data file TDATA07

NEED:
Integration delay: .1160E+00
Thresholds: .3217E+06

Coarse 1.0
Fine 1.0
Track 16.0

.4564E+00
.9190E+05
.1344E+02
.7352E+06

Constants: .31700
Displacements: 0.00000

.25500
0.00000

.40600
0.00000

.26500
0.00000

| temp | angle | dark current | star mag. | referenc | | position | | standard deviation | |
|--------|--------|-----------------|--------------|----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 20.102 | 52.072 | .7117E+05 | .958 | 130.0 | 125.0 | 130.1545 | 125.0490 | .1331E-02 | .8931E-03 |
| 20.113 | 58.292 | .6803E+05 | .943 | 130.5 | 125.0 | 130.3102 | 124.9260 | .4216E-03 | .1293E-02 |
| 20.108 | 44.604 | .7264E+05 | .918 | 130.5 | 125.0 | 130.4321 | 124.7097 | .4455E-03 | .1270E-02 |
| 20.133 | 70.866 | .9464E+05 | .809 | 130.5 | 124.5 | 130.5656 | 124.5693 | .5135E-03 | .6714E-03 |
| 20.094 | 1.802 | .9450E+05 | .839 | 130.5 | 124.5 | 130.6807 | 124.3680 | .9178E-03 | .1285E-03 |
| 20.175 | 8.180 | .1370E+06 | .998 | 131.0 | 124.0 | 130.7567 | 124.1631 | .6128E-03 | .1011E-02 |
| 20.175 | 14.360 | .1472E+06 | .998 | 131.0 | 124.0 | 130.8511 | 123.9448 | .7265E-03 | .3989E-03 |
| 20.150 | 20.746 | .1562E+06 | .948 | 131.0 | 124.0 | 130.9183 | 123.7091 | .1394E-02 | .5660E-03 |
| 20.038 | 26.949 | .1381E+06 | .822 | 131.0 | 123.5 | 130.9280 | 123.5208 | .7658E-03 | .7155E-03 |
| 20.085 | 33.254 | .1317E+06 | .959 | 131.0 | 123.0 | 130.9169 | 123.3187 | .8982E-03 | .6421E-03 |
| 20.125 | 39.526 | .1214E+06 | 1.000 | 131.0 | 123.0 | 130.8840 | 123.0546 | .7831E-03 | .1130E-02 |
| 20.074 | 45.822 | .1141E+06 | .947 | 131.0 | 123.0 | 130.8628 | 122.8650 | .8945E-03 | .7793E-03 |
| 20.097 | 52.075 | .9023E+05 | .815 | 131.0 | 122.5 | 130.7942 | 122.6751 | .8434E-02 | .3131E-01 |
| 20.071 | 58.269 | .6579E+05 | .745 | 131.0 | 122.5 | 130.7146 | 122.4739 | .6292E-03 | .4952E-03 |
| 20.144 | 64.567 | .1069E+06 | .908 | 130.5 | 122.0 | 130.5941 | 122.2915 | .8503E-03 | .7024E-03 |
| 20.186 | 70.863 | .1045E+06 | .956 | 130.5 | 122.0 | 130.4517 | 122.1083 | .3844E-03 | .7733E-03 |
| 20.142 | 1.808 | .1004E+06 | .963 | 130.5 | 122.0 | 130.2994 | 121.9802 | .4871E-03 | .8683E-03 |
| 20.113 | 8.158 | .1166E+06 | .973 | 130.0 | 122.0 | 130.1372 | 121.7924 | .9743E-03 | .1116E-02 |
| 20.088 | 14.373 | .1121E+06 | .904 | 130.0 | 121.5 | 129.9646 | 121.6893 | .4850E-03 | .9664E-03 |
| 20.105 | 20.728 | .1184E+06 | .859 | 130.0 | 121.5 | 129.7807 | 121.5856 | .4147E-03 | .6506E-03 |
| 20.128 | 26.960 | .9867E+05 | .802 | 129.5 | 121.5 | 129.5651 | 121.4899 | .3931E-03 | .3504E-03 |
| 20.105 | 33.245 | .8692E+05 | .835 | 129.5 | 121.5 | 129.3499 | 121.4209 | .7006E-03 | .3092E-03 |
| 20.122 | 39.542 | .8541E+05 | .875 | 129.0 | 121.5 | 129.1414 | 121.3714 | .6691E-03 | .6253E-03 |
| 20.108 | 45.820 | .8915E+05 | .997 | 129.0 | 121.0 | 128.9127 | 121.3445 | .7117E-03 | .7777E-03 |
| 20.147 | 52.054 | .8706E+05 | .979 | 128.5 | 121.0 | 128.6965 | 121.3538 | .7411E-02 | .1752E-02 |
| 20.102 | 58.362 | .8368E+05 | .847 | 128.5 | 121.5 | 128.5056 | 121.3787 | .4349E-03 | .6202E-03 |
| 20.091 | 64.622 | .9108E+05 | .867 | 128.0 | 121.5 | 128.2716 | 121.4128 | .7011E-03 | .7043E-03 |
| 20.094 | 70.880 | .1007E+06 | .828 | 128.0 | 121.5 | 128.0610 | 121.4926 | .9777E-03 | .5706E-03 |
| 20.077 | 1.816 | .1110E+06 | .839 | 128.0 | 121.5 | 127.8340 | 121.6008 | .7524E-03 | .3512E-03 |
| 20.116 | 8.179 | .1398E+06 | .952 | 127.5 | 122.0 | 127.6743 | 121.6137 | .3152E-01 | .5958E-01 |
| 20.097 | 14.388 | .1034E+06 | .962 | 127.5 | 122.0 | 127.4887 | 121.8145 | .4351E-03 | .7013E-03 |
| 20.133 | 20.754 | .1076E+06 | .958 | 127.5 | 122.0 | 127.3460 | 121.9882 | .4697E-03 | .1169E-02 |
| 20.094 | 26.950 | .1207E+06 | .969 | 127.0 | 122.0 | 127.1743 | 122.1305 | .8070E-03 | .8184E-03 |
| 20.116 | 33.242 | .1193E+06 | .932 | 127.0 | 122.0 | 127.0375 | 122.3414 | .1101E-02 | .1174E-02 |
| 20.038 | 39.528 | .7123E+05 | .756 | 127.0 | 122.5 | 126.9111 | 122.4810 | .7011E-03 | .7445E-03 |

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| | | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|----|
| 20.0 | 45 | SE 11 | . | 0 | 0 | 554 | 12.6 | 33 | 1 | 03 |
| 20.069 | 52.043 | .1142E+06 | .936 | 127.0 | 123.0 | 126.7851 | 122.8612 | .00E-03 | .7505E-03 | |
| 20.055 | 58.358 | .1264E+06 | .976 | 127.0 | 123.0 | 126.7260 | 123.0529 | .00E-03 | .1374E-02 | |
| 20.094 | 64.610 | .1397E+06 | .933 | 127.0 | 123.0 | 126.7180 | 123.3478 | .6707E-03 | .1495E-02 | |
| 20.094 | 70.849 | .1441E+06 | .801 | 127.0 | 123.5 | 126.7237 | 123.5549 | .3960E-03 | .7659E-03 | |
| 20.212 | 1.837 | .1588E+06 | .941 | 127.0 | 124.0 | 126.7637 | 123.7499 | .7554E-03 | .1855E-02 | |
| 20.192 | 8.180 | .1428E+06 | 1.020 | 127.0 | 124.0 | 126.8019 | 123.9605 | .1519E-02 | .5203E-03 | |
| 20.198 | 14.384 | .1318E+06 | 1.012 | 127.0 | 124.0 | 126.8586 | 124.1790 | .7176E-03 | .9180E-03 | |
| 20.142 | 20.745 | .9526E+05 | .860 | 127.0 | 123.5 | 126.9782 | 124.3684 | .6197E-03 | .4683E-03 | |
| 20.094 | 26.966 | .9343E+05 | .831 | 127.0 | 124.5 | 127.0831 | 124.5725 | .8379E-03 | .1047E-02 | |
| 20.147 | 33.248 | .7269E+05 | .928 | 127.0 | 125.0 | 127.2104 | 124.7233 | .5779E-03 | .1454E-02 | |
| 20.102 | 39.482 | .6778E+05 | .948 | 127.5 | 125.0 | 127.3331 | 124.9312 | .2724E-03 | .4645E-03 | |
| 20.136 | 45.827 | .6761E+05 | .946 | 127.5 | 125.0 | 127.4850 | 125.0417 | .4266E-03 | .7210E-03 | |
| 20.122 | 52.098 | .7526E+05 | .934 | 127.5 | 125.0 | 127.6552 | 125.1616 | .7637E-03 | .1040E-02 | |
| 20.125 | 58.382 | .9454E+05 | .955 | 128.0 | 125.0 | 127.8671 | 125.3193 | .8941E-03 | .1619E-02 | |
| 20.122 | 64.632 | .9849E+05 | .877 | 128.0 | 125.5 | 128.0767 | 125.3626 | .7003E-03 | .9690E-03 | |
| 20.128 | 70.877 | .1037E+06 | .861 | 128.0 | 125.5 | 128.2752 | 125.4351 | .6313E-03 | .5822E-03 | |
| 20.175 | 1.819 | .1056E+06 | .814 | 128.5 | 125.5 | 128.4844 | 125.5064 | .5561E-03 | .6655E-03 | |
| 20.125 | 8.178 | .1222E+06 | .864 | 129.0 | 125.5 | 128.7109 | 125.5468 | .7148E-03 | .7655E-03 | |
| 20.113 | 14.370 | .1141E+06 | .863 | 129.0 | 125.5 | 128.9409 | 125.5331 | .1871E-02 | .6476E-03 | |
| 20.158 | 20.744 | .1095E+06 | .845 | 129.0 | 125.5 | 129.1679 | 125.4903 | .1432E-02 | .9145E-03 | |
| 20.128 | 26.994 | .1010E+06 | .855 | 129.5 | 125.5 | 129.3564 | 125.4471 | .1050E-02 | .6763E-03 | |
| 20.142 | 33.264 | .9860E+05 | .861 | 129.5 | 125.5 | 129.5568 | 125.3883 | .7732E-03 | .7270E-03 | |
| 20.167 | 39.545 | .1012E+06 | .946 | 130.0 | 125.5 | 129.7549 | 125.2954 | .6258E-03 | .1181E-02 | |
| 20.113 | 45.810 | .8344E+05 | .973 | 130.0 | 125.0 | 129.9490 | 125.1942 | .1099E-02 | .1953E-02 | |

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TM61-04

| | 1 | 2 | delta r1 | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .00499 | .01711 | -.03615 | -.00999 | -.01065 | .02352 |
| 1 | .00099 | .02250 | .01565 | .00561 | .00370 | .02522 |
| 2 | .01951 | .02810 | .01395 | .00587 | -.02259 | .00230 |
| 3 | -.00972 | -.01416 | -.01551 | -.01586 | -.01007 | .00603 |
| 4 | -.01375 | -.01834 | -.00310 | -.01277 | -.01544 | .00599 |
| 5 | -.00013 | -.03165 | .00336 | -.00487 | .01756 | .02805 |
| 6 | .01929 | .03409 | .00990 | .00633 | -.01272 | -.00709 |
| 7 | .00574 | -.02675 | -.01493 | -.02917 | .01888 | -.00123 |
| 8 | -.00717 | .02180 | -.02356 | -.01645 | .00903 | .02489 |
| 9 | .01222 | -.00492 | -.00718 | -.00206 | -.00790 | .00006 |

x0= 128.8203 r0= 123.4304 r0= 2.09397459 std.dev.= .01782441

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 0 | 3 | 11 | 20 | 25 | 0 |

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OF POOR QUALITY

TR81-04

| | 1 | 2 | delta ri 3 | 4 | 5 | 7 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .00457 | .01678 | -.02633 | -.00295 | -.01055 | -.02125 |
| 1 | .00147 | .02318 | .01650 | .00635 | .00499 | .02732 |
| 2 | | .02995 | .01600 | .00812 | -.02019 | .00439 |
| 3 | -.00699 | -.01130 | -.01252 | -.01276 | -.00689 | -.00279 |
| 4 | -.01047 | -.01505 | .00019 | -.00951 | -.01223 | |
| 5 | .00293 | -.02871 | .00618 | -.00222 | .02009 | .03045 |
| 6 | .02150 | .03613 | .01167 | .00791 | -.01137 | .00590 |
| 7 | .00672 | -.02598 | -.01436 | -.02877 | .01909 | -.00137 |
| 8 | -.00725 | .02155 | -.02392 | -.01690 | .00842 | .02429 |
| 9 | .01158 | -.00558 | -.00784 | -.00269 | -.00349 | .00047 |

x0= 128.8207 y0= 123.4323 r0= 2.09265852 std.dev.= .01637417

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|-------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.001 | bad points |
| | 0 | 0 | 3 | 13 | 16 | 26 | 2 |

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Disk 12-B Track data file TDATA08

NDRO:
Integration delay: .1160E+00
Thresholds: .1838E+06

Coarse 1.0
Fine 1.0
Track 64.0
.4564E+00
.9190E+05

Constants: .31700
Displacements: 0.00000

.25500
0.00000

.40600
0.00000

.26500
0.00000

| temp | angle | dark | | star | | reference | | position | | standard deviation | |
|--------|--------|-----------|-------|-------|-------|-----------|----------|-----------|-----------|--------------------|---|
| | | current | max. | max. | | X | Y | X | Y | X | Y |
| 20.189 | 64.611 | .3692E+05 | 2.967 | 130.5 | 125.0 | 130.4337 | 124.6629 | .6727E-03 | .1333E-02 | | |
| 20.191 | 70.970 | .4083E+05 | 2.823 | 130.5 | 124.5 | 130.5697 | 124.5480 | .3946E-03 | .6214E-03 | | |
| 20.184 | 1.805 | .4104E+05 | 2.863 | 130.5 | 124.5 | 130.6920 | 124.3331 | .8849E-03 | .9848E-03 | | |
| 20.254 | 8.163 | .5245E+05 | 2.992 | 131.0 | 124.0 | 130.7859 | 124.0839 | .9380E-03 | .1137E-02 | | |
| 20.231 | 14.359 | .5339E+05 | 3.036 | 131.0 | 124.0 | 130.8940 | 123.8877 | .1124E-02 | .1852E-02 | | |
| 20.251 | 20.728 | .5535E+05 | 3.008 | 131.0 | 124.0 | 130.9613 | 123.6603 | .9663E-03 | .1290E-02 | | |
| 20.116 | 26.957 | .4950E+05 | 2.841 | 131.0 | 123.5 | 130.9650 | 123.4851 | .8914E-03 | .4402E-03 | | |
| 20.108 | 33.233 | .4865E+05 | 2.934 | 131.0 | 123.0 | 130.9483 | 123.2360 | .1228E-02 | .1192E-02 | | |
| 20.111 | 39.516 | .4690E+05 | 2.989 | 131.0 | 123.0 | 130.9244 | 122.9906 | .1173E-02 | .8697E-03 | | |
| 20.091 | 45.814 | .4530E+05 | 2.973 | 131.0 | 123.0 | 130.8991 | 122.8044 | .8093E-03 | .1664E-02 | | |
| | | | | | | | | | | | |
| 20.099 | 52.099 | .4209E+05 | 2.810 | 131.0 | 122.5 | 130.8220 | 122.6481 | .8001E-02 | .5567E-02 | | |
| 20.139 | 58.367 | .3905E+05 | 2.766 | 131.0 | 122.5 | 130.7255 | 122.4341 | .5032E-03 | .7668E-03 | | |
| 20.150 | 64.642 | .4384E+05 | 2.898 | 130.5 | 122.0 | 130.5995 | 122.2064 | .5959E-03 | .1137E-02 | | |
| 20.189 | 70.863 | .4332E+05 | 2.961 | 130.5 | 122.0 | 130.4542 | 122.0462 | .1019E-02 | .1116E-02 | | |
| 20.203 | 1.809 | .4297E+05 | 3.008 | 130.5 | 122.0 | 130.3023 | 121.9126 | .9358E-03 | .8000E-03 | | |
| 20.189 | 8.196 | .4624E+05 | 3.003 | 130.0 | 122.0 | 130.1720 | 121.7362 | .3618E-03 | .8606E-03 | | |
| 20.181 | 14.377 | .4339E+05 | 2.901 | 130.0 | 121.5 | 129.9947 | 121.6605 | .7158E-03 | .8827E-03 | | |
| 20.181 | 20.750 | .4372E+05 | 2.863 | 130.0 | 121.5 | 129.8031 | 121.5667 | .8728E-03 | .9699E-03 | | |
| 20.195 | 26.971 | .4018E+05 | 2.811 | 129.5 | 121.5 | 129.5726 | 121.4683 | .6406E-03 | .4979E-03 | | |
| 20.215 | 33.256 | .3822E+05 | 2.837 | 129.5 | 121.5 | 129.3601 | 121.3954 | .8157E-03 | .1107E-02 | | |
| | | | | | | | | | | | |
| 20.153 | 39.563 | .3786E+05 | 2.918 | 129.0 | 121.0 | 129.1532 | 121.2845 | .6637E-03 | .8251E-03 | | |
| 20.170 | 45.815 | .3833E+05 | 2.948 | 129.0 | 121.0 | 128.9362 | 121.2577 | .1758E-02 | .1758E-02 | | |
| 20.175 | 52.092 | .3961E+05 | 2.937 | 128.5 | 121.0 | 128.6892 | 121.2642 | .1193E-02 | .1952E-02 | | |
| 20.158 | 58.367 | .3990E+05 | 2.923 | 128.5 | 121.0 | 128.4768 | 121.3164 | .8442E-03 | .1212E-02 | | |
| 20.184 | 64.594 | .4048E+05 | 2.833 | 128.5 | 121.5 | 128.3038 | 121.3906 | .4761E-03 | .6125E-03 | | |
| 20.212 | 70.880 | .4259E+05 | 2.819 | 128.0 | 121.5 | 128.0972 | 121.4628 | .5499E-03 | .4908E-03 | | |
| 20.172 | 1.816 | .4494E+05 | 2.830 | 128.0 | 121.5 | 127.8629 | 121.5768 | .1027E-02 | .4865E-03 | | |
| 20.240 | 8.153 | .4320E+05 | 2.878 | 127.5 | 121.5 | 127.6525 | 121.6764 | .3654E-03 | .5052E-03 | | |
| 20.167 | 14.380 | .4557E+05 | 3.013 | 127.5 | 122.0 | 127.4698 | 121.7718 | .7029E-03 | .7828E-03 | | |
| 20.217 | 20.749 | .4492E+05 | 3.009 | 127.5 | 122.0 | 127.3336 | 121.9404 | .4968E-03 | .6753E-03 | | |
| | | | | | | | | | | | |
| 20.150 | 26.966 | .4826E+05 | 2.952 | 127.0 | 122.0 | 127.2233 | 122.0753 | .2971E-03 | .1324E-02 | | |
| 20.167 | 33.254 | .4825E+05 | 2.899 | 127.0 | 122.0 | 127.0786 | 122.2718 | .2912E-03 | .2013E-02 | | |
| 20.128 | 39.552 | .4064E+05 | 2.765 | 127.0 | 122.5 | 126.9704 | 122.4521 | .1098E-02 | .7480E-03 | | |
| 20.128 | 45.810 | .4158E+05 | 2.822 | 127.0 | 122.5 | 126.8683 | 122.6616 | .1083E-02 | .1251E-02 | | |
| 20.147 | 52.103 | .4581E+05 | 2.953 | 127.0 | 123.0 | 126.7601 | 122.8963 | .1301E-02 | .1367E-02 | | |

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| | | | | | | | | | | |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|---|
| 0.1. | 50. | E+05 | 2. | 1 | 0 | 12 | 26 | 2.2 | 1 | 0 |
| 20.099 | 64.617 | .4978E+05 | 2.914 | 127.0 | 123.0 | 126.7381 | 123.2514 | .1004E-02 | .441E-03 | |
| 20.116 | 70.830 | .5086E+05 | 2.820 | 127.0 | 123.5 | 126.7509 | 123.5047 | .072E-02 | .656E-03 | |
| 20.192 | 1.805 | .5774E+05 | 2.997 | 127.0 | 124. | 126.7831 | 123.6605 | .223E-01 | .203E-01 | |
| 20.220 | 3.174 | .5282E+05 | 3.040 | 127.0 | 126. | 126.8432 | 123.8923 | .105E-02 | .115E-02 | |
| 20.265 | 14.391 | .5124E+05 | 3.007 | 127.0 | 124.0 | 126.8953 | 124.0856 | .674E-02 | .215E-02 | |
| 20.189 | 20.734 | .4293E+05 | 2.892 | 127.0 | 124.5 | 127.0144 | 124.3184 | .185E-02 | .121E-02 | |
| 20.167 | 26.953 | .4266E+05 | 2.832 | 127.0 | 124.5 | 127.1169 | 124.5127 | .120E-02 | .801E-02 | |
| 20.181 | 33.268 | .4243E+05 | 2.926 | 127.0 | 124.5 | 127.2265 | 124.7094 | .110E-02 | .109E-02 | |
| 20.181 | 39.547 | .3752E+05 | 2.978 | 127.5 | 125.0 | 127.3350 | 124.8457 | .1044E-02 | .108E-02 | |
| 20.240 | 45.824 | .3770E+05 | 2.951 | 127.5 | 125.0 | 127.4906 | 124.9520 | .653E-03 | .247E-02 | |
| 20.170 | 52.099 | .3847E+05 | 2.918 | 127.5 | 125.0 | 127.6675 | 125.0592 | .5120E-03 | .823E-03 | |
| 20.136 | 58.367 | .4123E+05 | 2.915 | 128.0 | 125.0 | 127.9000 | 125.2019 | .1040E-02 | .903E-03 | |
| 20.189 | 64.629 | .4201E+05 | 2.875 | 128.0 | 125.5 | 128.1203 | 125.2997 | .667E-03 | .933E-03 | |
| 20.175 | 70.891 | .4274E+05 | 2.854 | 128.5 | 125.5 | 128.2821 | 125.3829 | .1036E-02 | .125E-02 | |
| 20.212 | 1.838 | .4415E+05 | 2.829 | 128.5 | 125.5 | 128.4943 | 125.4557 | .890E-03 | .846E-03 | |
| 20.181 | 8.201 | .4449E+05 | 2.863 | 129.0 | 125.5 | 128.7404 | 125.4984 | .6847E-03 | .658E-03 | |
| 20.206 | 14.384 | .4338E+05 | 2.861 | 129.0 | 125.5 | 128.9756 | 125.4831 | .7281E-03 | .879E-03 | |
| 20.220 | 20.726 | .4269E+05 | 2.944 | 129.0 | 125.5 | 129.2021 | 125.4402 | .120E-02 | .553E-03 | |
| 20.158 | 26.976 | .4107E+05 | 2.874 | 129.5 | 125.5 | 129.3654 | 125.3966 | .6666E-03 | .863E-03 | |
| 20.217 | 33.248 | .4037E+05 | 2.879 | 129.5 | 125.5 | 129.5630 | 125.3324 | .7794E-03 | .1081E-02 | |
| 20.206 | 39.546 | .4026E+05 | 2.923 | 130.0 | 125.0 | 129.7755 | 125.2389 | .459E-03 | .1294E-02 | |
| 20.192 | 45.828 | .3724E+05 | 2.933 | 130.0 | 125.0 | 129.9970 | 125.0840 | .1564E-02 | .185E-02 | |
| 20.172 | 52.108 | .3594E+05 | 2.945 | 130.0 | 125.0 | 130.2030 | 124.9685 | .102E-02 | .129E-02 | |
| 20.203 | 58.362 | .3604E+05 | 2.988 | 130.5 | 125.0 | 130.3199 | 124.8536 | .2356E-03 | .161E-02 | |

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| | delta ri | | | | | |
|---|----------|---------|---------|---------|---------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | -.04792 | -.00748 | -.01284 | -.02734 | .01844 | .04171 |
| 1 | .02921 | .01432 | .02127 | .03873 | .01347 | .01334 |
| 2 | .01605 | -.00468 | -.02655 | .01807 | -.02586 | .04317 |
| 3 | -.04805 | -.04274 | .02545 | .03229 | .03017 | .00541 |
| 4 | -.02848 | -.03158 | .03528 | .00819 | .02988 | .00012 |
| 5 | -.00447 | .00014 | .00719 | .00054 | .02120 | .04702 |
| 6 | .02834 | .01586 | -.00081 | -.01510 | .00829 | .02359 |
| 7 | .01097 | .01342 | .02321 | -.00250 | .03144 | .01346 |
| 8 | -.03035 | -.00226 | .02193 | .03719 | .02271 | .00821 |
| 9 | -.00290 | -.00607 | -.00819 | -.03106 | .00119 | .00431 |

0= 128.8507 r0= 123.3761 r0= 2.08791971 std.dev.= .02418402

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 6 | 9 | 15 | 11 | 19 | 0 |

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OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.04790 | -.00746 | -.01283 | -.02732 | .01946 | .04173 |
| 1 | .02223 | .01434 | .02129 | .01875 | .01349 | .01536 |
| 2 | .01607 | .00466 | -.02654 | .01808 | -.02405 | .04312 |
| 3 | -.04805 | -.04274 | .02545 | .03228 | .03015 | .00042 |
| 4 | -.02850 | -.03161 | -.03531 | .00826 | .02804 | .00078 |
| 5 | -.00451 | .00010 | .00714 | .00050 | .02115 | .04702 |
| 6 | .02829 | .01581 | | -.01519 | -.00834 | -.02402 |
| 7 | -.01101 | .01338 | .02317 | -.00254 | -.03147 | -.02349 |
| 8 | -.03038 | -.00229 | .02191 | .03717 | .02269 | .00530 |
| 9 | -.00291 | -.00608 | -.00820 | -.03106 | .00119 | -.00430 |

x0= 129.8507 y0= 123.3761 r0= 2.08793402 std.dev.= .02438785

HISTOGRAM DEVIATION $\Delta = e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 6 | 9 | 15 | 11 | 18 | 1 |

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Disk 12-B Track data file IDATA00

NDRO:
Integration delay: .1160E+00
Thresholds: .1838E+06

Coarse 1.0
Fine 1.0
Track 192.0
.4564E+00
.9190E+05
.7974E+00
.7352E+06

Constants: .31700
Displacements: 0.00000

.25500
0.00000

.40600
0.00000

.26500
0.00000

| temp | angle | dark current | star mag. | reference | | Position | | standard deviation | |
|--------|--------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| 20.231 | 64.633 | .5333E+05 | 6.289 | 130.5 | 125.0 | 130.4487 | 124.6446 | .6066E-02 | .964E-02 |
| 20.220 | 70.752 | .5275E+05 | 6.059 | 130.5 | 124.5 | 130.5535 | 124.5383 | .4225E-02 | .2724E-02 |
| 20.234 | 1.805 | .5291E+05 | 6.105 | 130.5 | 124.5 | 130.6783 | 124.3290 | .5389E-02 | .3237E-02 |
| 20.332 | 8.167 | .5408E+05 | 6.320 | 130.5 | 124.0 | 130.7315 | 124.0343 | .1884E-02 | .8662E-02 |
| 20.313 | 14.365 | .5704E+05 | 6.401 | 131.0 | 124.0 | 130.8208 | 123.7942 | .4266E-02 | .1097E-01 |
| 20.231 | 20.741 | .5661E+05 | 6.292 | 131.0 | 123.5 | 130.8768 | 123.6893 | .9482E-02 | .8090E-01 |
| 20.153 | 26.966 | .5638E+05 | 6.173 | 131.0 | 123.5 | 130.9121 | 123.4624 | .4024E-02 | .5772E-02 |
| 20.170 | 33.263 | .5625E+05 | 6.178 | 131.0 | 123.0 | 130.8431 | 123.1998 | .5425E-02 | .6676E-02 |
| 20.158 | 39.536 | .5613E+05 | 6.226 | 131.0 | 123.0 | 130.8202 | 122.9524 | .3790E-02 | .5372E-02 |
| 20.153 | 45.820 | .5615E+05 | 6.218 | 131.0 | 123.0 | 130.8001 | 122.7672 | .6264E-02 | .4833E-02 |
| 20.200 | 52.100 | .5547E+05 | 6.010 | 131.0 | 122.5 | 130.7799 | 122.6022 | .2467E-01 | .1291E-01 |
| 20.161 | 58.367 | .5242E+05 | 5.955 | 130.5 | 122.5 | 130.6409 | 122.3965 | .2805E-02 | .3854E-02 |
| 20.203 | 64.611 | .5266E+05 | 6.041 | 130.5 | 122.0 | 130.5720 | 122.0747 | .2320E-01 | .4834E-01 |
| 20.172 | 70.877 | .5229E+05 | 6.058 | 130.5 | 122.0 | 130.4610 | 121.8970 | .2328E-02 | .4774E-02 |
| 20.217 | 1.819 | .5248E+05 | 6.098 | 130.5 | 122.0 | 130.3213 | 121.7843 | .7944E-03 | .7441E-02 |
| 20.237 | 8.175 | .5262E+05 | 6.105 | 130.0 | 122.0 | 130.1939 | 121.6276 | .1835E-02 | .2854E-02 |
| 20.215 | 14.382 | .5385E+05 | 6.199 | 130.0 | 121.5 | 130.0662 | 121.6601 | .3538E-02 | .3757E-02 |
| 20.240 | 20.724 | .5385E+05 | 6.167 | 130.0 | 121.5 | 129.8605 | 121.5562 | .4373E-02 | .4273E-02 |
| 20.271 | 26.963 | .5388E+05 | 6.143 | 129.5 | 121.5 | 129.6529 | 121.4427 | .4328E-02 | .1724E-01 |
| 20.192 | 33.271 | .5373E+05 | 6.139 | 129.5 | 121.5 | 129.4456 | 121.3482 | .3963E-02 | .5023E-02 |
| 20.259 | 39.530 | .5300E+05 | 6.200 | 129.0 | 121.0 | 129.1340 | 121.3273 | .5537E-02 | .1039E-01 |
| 20.248 | 45.818 | .5299E+05 | 6.219 | 129.0 | 121.0 | 128.9002 | 121.2795 | .2917E-02 | .8519E-02 |
| 20.234 | 52.076 | .5530E+05 | 6.245 | 128.5 | 121.0 | 128.6933 | 121.2463 | .1013E-02 | .6787E-02 |
| 20.226 | 58.368 | .5543E+05 | 6.237 | 128.5 | 121.0 | 128.4614 | 121.3184 | .9739E-02 | .1223E-01 |
| 20.215 | 64.618 | .5544E+05 | 6.160 | 128.5 | 121.5 | 128.2758 | 121.3292 | .7704E-02 | .6341E-02 |
| 20.240 | 70.877 | .5547E+05 | 6.097 | 128.0 | 121.5 | 128.1240 | 121.4410 | .4791E-02 | .5442E-02 |
| 20.212 | 1.805 | .5570E+05 | 6.100 | 128.0 | 121.5 | 127.8845 | 121.5566 | .2808E-02 | .4635E-02 |
| 20.226 | 8.188 | .5526E+05 | 6.178 | 127.5 | 121.5 | 127.6930 | 121.6695 | .3215E-02 | .4315E-02 |
| 20.240 | 14.369 | .5532E+05 | 6.307 | 127.5 | 122.0 | 127.5117 | 121.7121 | .3027E-02 | .1268E-01 |
| 20.130 | 20.715 | .5519E+05 | 6.286 | 127.5 | 122.0 | 127.3650 | 121.8901 | .3414E-02 | .6231E-02 |
| 20.212 | 26.990 | .5505E+05 | 6.168 | 127.0 | 122.0 | 127.1674 | 121.9837 | .2005E-02 | .4425E-02 |
| 20.243 | 33.254 | .5512E+05 | 6.115 | 127.0 | 122.0 | 127.0186 | 122.1881 | .5143E-02 | .5095E-02 |
| 20.217 | 39.536 | .5537E+05 | 6.054 | 127.0 | 122.5 | 126.9629 | 122.4634 | .3624E-02 | .1253E-02 |
| 20.184 | 45.816 | .5533E+05 | 6.106 | 127.0 | 122.5 | 126.8789 | 122.6834 | .4732E-02 | .5588E-02 |
| 20.172 | 52.120 | .5616E+05 | 6.251 | 127.0 | 123.0 | 126.8063 | 122.8185 | .2184E-02 | .4583E-02 |

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| 0.1 | 58 | 2E+0 | 6. | 0 | 0 | 121 | 12.0 | 7E-1 | 01 |
|--------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| 20.156 | 64.596 | .5474E+05 | 6.305 | 126.5 | 123.0 | 126.7482 | 123.2774 | .7131E-01 | .2731E-02 |
| 20.206 | 70.770 | .5661E+05 | 6.147 | 127.0 | 123.5 | 126.7483 | 123.4774 | .4714E-02 | .4705E-02 |
| 20.206 | 1.798 | .5641E+05 | 6.254 | 127.0 | 124.0 | 126.7687 | 123.6758 | .2035E-01 | .8707E-01 |
| 20.259 | 8.148 | .5621E+05 | 6.290 | 127.0 | 124.0 | 126.8015 | 123.7861 | .4217E-02 | .6759E-02 |
| | | | | | | | | | |
| 20.293 | 14.369 | .5619E+05 | 6.251 | 127.0 | 124.0 | 126.8565 | 123.9740 | .2462E-02 | .3246E-02 |
| 20.234 | 20.718 | .5570E+05 | 6.158 | 127.0 | 124.5 | 127.0158 | 124.3055 | .3270E-01 | .1079E-01 |
| 20.209 | 26.974 | .5551E+05 | 6.082 | 127.0 | 124.5 | 127.1296 | 124.5053 | .3148E-02 | .3241E-02 |
| 20.262 | 33.256 | .5560E+05 | 6.191 | 127.0 | 124.5 | 127.2375 | 124.6966 | .4781E-02 | .3101E-02 |
| 20.243 | 39.529 | .5517E+05 | 6.219 | 127.5 | 125.0 | 127.3206 | 124.8499 | .4720E-02 | .3647E-02 |
| 20.240 | 45.812 | .5504E+05 | 6.177 | 127.5 | 125.0 | 127.4793 | 124.9758 | .4709E-02 | .3264E-02 |
| 20.251 | 52.085 | .5498E+05 | 6.154 | 127.5 | 125.0 | 127.6473 | 125.0500 | .2535E-02 | .4815E-02 |
| 20.243 | 58.376 | .5542E+05 | 6.126 | 128.0 | 125.0 | 127.9207 | 125.1953 | .5071E-02 | .7699E-02 |
| 20.257 | 64.604 | .5573E+05 | 6.155 | 128.0 | 125.5 | 128.2059 | 125.2815 | .4424E-01 | .4072E-01 |
| 20.245 | 70.813 | .5604E+05 | 6.136 | 128.5 | 125.5 | 128.2998 | 125.3913 | .3327E-02 | .2705E-02 |
| | | | | | | | | | |
| 20.243 | 1.813 | .5602E+05 | 6.122 | 128.5 | 125.5 | 128.5220 | 125.4677 | .4374E-02 | .5477E-02 |
| 20.212 | 8.178 | .5442E+05 | 6.146 | 129.0 | 125.5 | 128.7091 | 125.5133 | .2987E-01 | .4189E-02 |
| 20.215 | 14.366 | .5389E+05 | 6.144 | 129.0 | 125.5 | 128.9433 | 125.4934 | .6113E-02 | .4711E-02 |
| 20.234 | 20.719 | .5387E+05 | 6.132 | 129.0 | 125.5 | 129.1791 | 125.4479 | .7870E-02 | .3425E-02 |
| 20.198 | 26.996 | .5381E+05 | 6.187 | 129.5 | 125.5 | 129.3635 | 125.3941 | .3142E-02 | .3473E-02 |
| 20.254 | 33.260 | .5382E+05 | 6.201 | 129.5 | 125.5 | 129.5687 | 125.3280 | .3530E-02 | .5533E-02 |
| 20.223 | 39.542 | .5362E+05 | 6.223 | 130.0 | 125.0 | 129.7654 | 125.2560 | .6030E-02 | .2844E-02 |
| 20.189 | 45.812 | .5346E+05 | 6.228 | 130.0 | 125.0 | 129.9995 | 125.0918 | .6007E-02 | .8189E-02 |
| 20.220 | 52.112 | .5342E+05 | 6.243 | 130.0 | 125.0 | 130.2221 | 124.9757 | .5808E-02 | .7524E-02 |
| 20.248 | 58.361 | .5348E+05 | 6.319 | 130.5 | 125.0 | 130.3186 | 124.8598 | .5009E-02 | .8258E-02 |

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| | | | delta r1 | | | |
|---|---------|---------|----------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | -.02498 | -.00404 | -.00549 | -.07558 | -.05603 | -.02005 |
| 1 | -.00759 | -.07520 | -.06347 | -.03783 | -.00343 | -.04425 |
| 2 | .06922 | -.09533 | .07382 | .10926 | .00629 | -.01797 |
| 3 | -.00877 | .00900 | -.03922 | -.01243 | .02447 | -.01860 |
| 4 | .01272 | -.04762 | -.07552 | -.05394 | .01948 | -.01497 |
| 5 | .06959 | .06824 | -.01730 | -.02291 | .00713 | .02653 |
| 6 | -.00336 | -.00151 | -.00094 | -.01335 | -.01910 | -.03979 |
| 7 | -.03588 | -.00637 | .03538 | .00518 | -.02287 | -.03767 |
| 8 | -.06584 | .01307 | .04343 | .06976 | .04905 | .02702 |
| 9 | .01461 | .01334 | .02494 | -.00024 | .04273 | .02223 |

$\mu_0 = 128.8338$ $\mu_0 = 123.3566$ $r_0 = 2.09056878$ $\text{std.dev.} = .04122237$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 14 | 5 | 6 | 9 | 12 | 14 | 0 |

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| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | -.02708 | -.00613 | -.00755 | -.07758 | | |
| 1 | -.01144 | -.07697 | -.06515 | -.02244 | | -.04574 |
| 2 | | -.02406 | .07262 | .10813 | .00512 | .01122 |
| 3 | | .00814 | | -.01314 | .02381 | |
| 4 | .01164 | -.04818 | -.05605 | -.05446 | | .01542 |
| 5 | .06806 | .06767 | -.01790 | -.02356 | .00645 | |
| 6 | -.00416 | -.00237 | | -.01432 | -.02013 | |
| 7 | -.03664 | -.00772 | .03397 | .00370 | -.02442 | -.07234 |
| 8 | | .01126 | .04156 | | .04707 | .02700 |
| 9 | .01255 | .01125 | .02283 | -.00236 | .04011 | .01016 |

u0= 128.8343 v0= 123.3572 r0= 2.09188914 std.dev.= .04118000

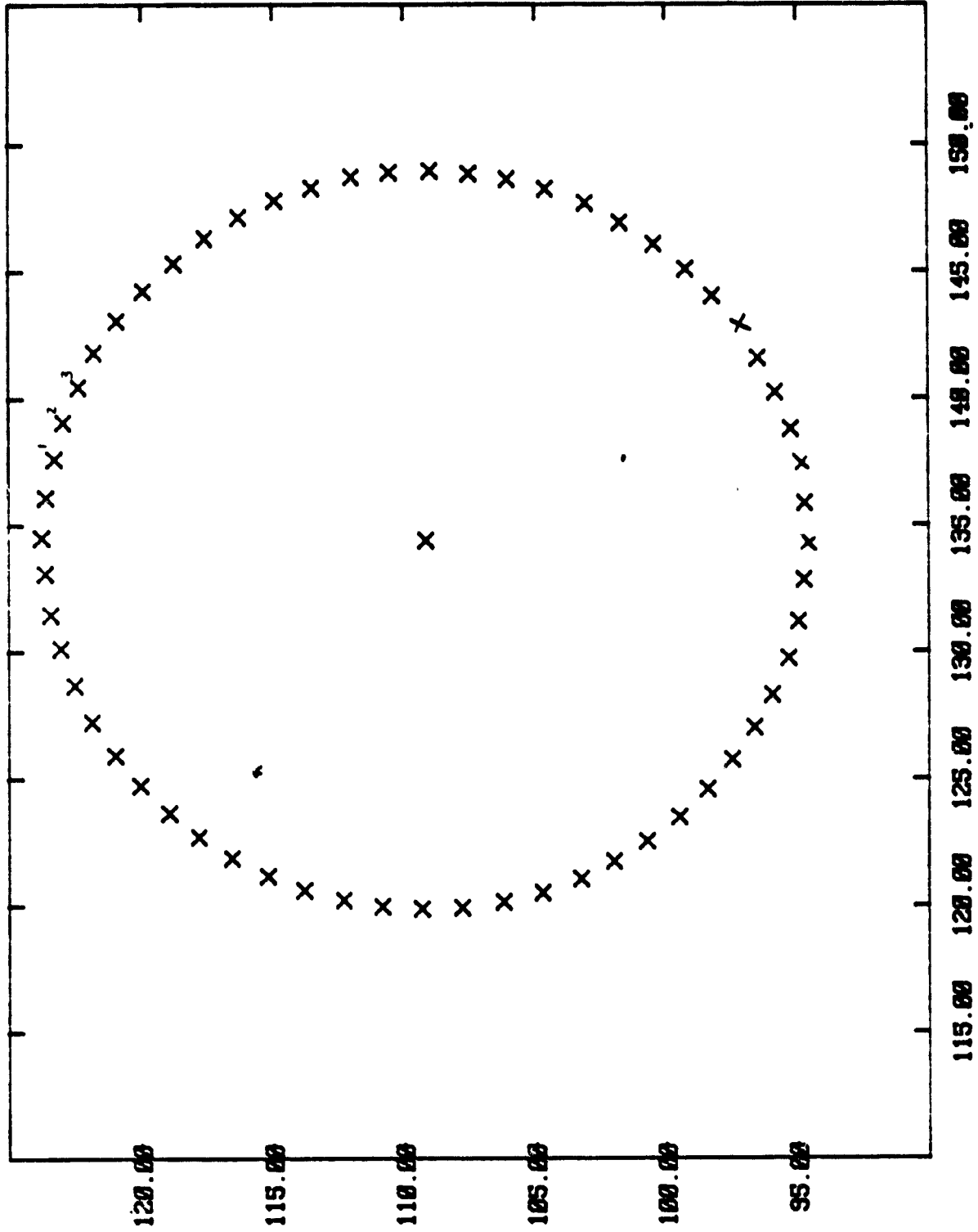
HISTOGRAM DEVIATION $\Delta = e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 10 | 5 | 4 | 8 | 10 | 10 | 13 |

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OF POOR QUALITY

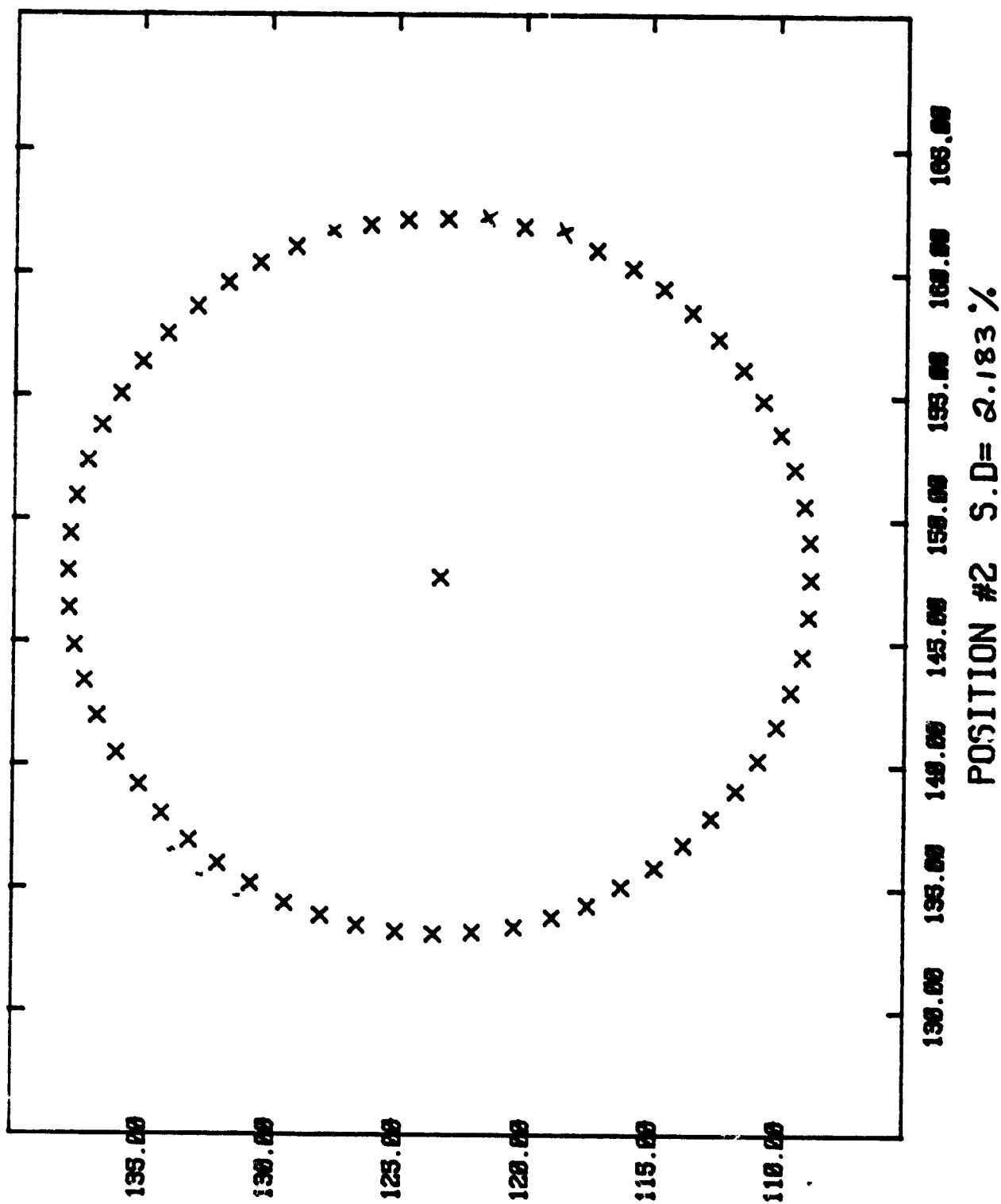
LARGE FIELD POINTING ACCURACY

Data accumulation for 0°C , medium star intensity at five locations on the CID array.

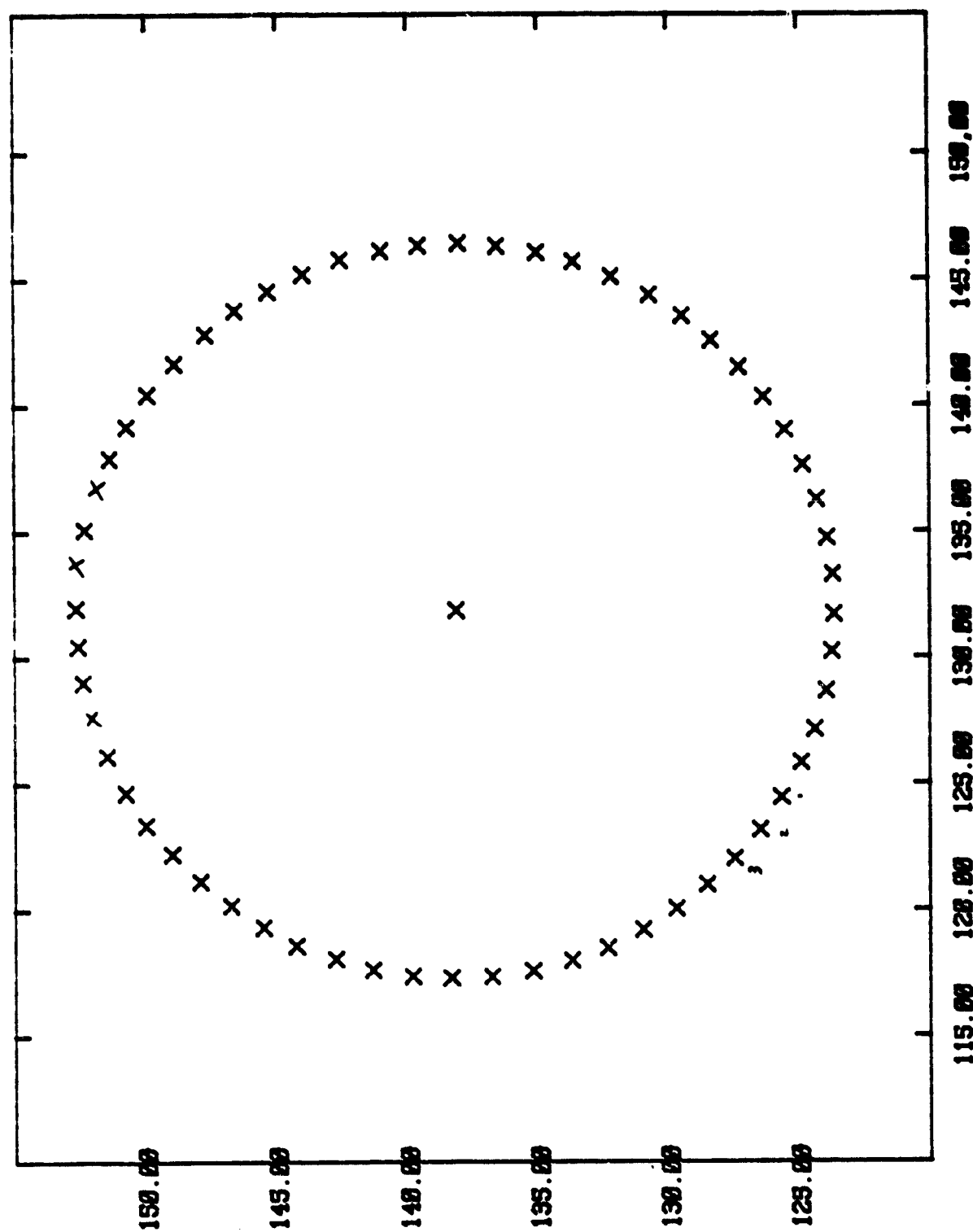


POSITION #1 S.D. = 2.023%

18-A-01 F2.8 +1.6M 2 K=.339.317.363.302 10% 0°C

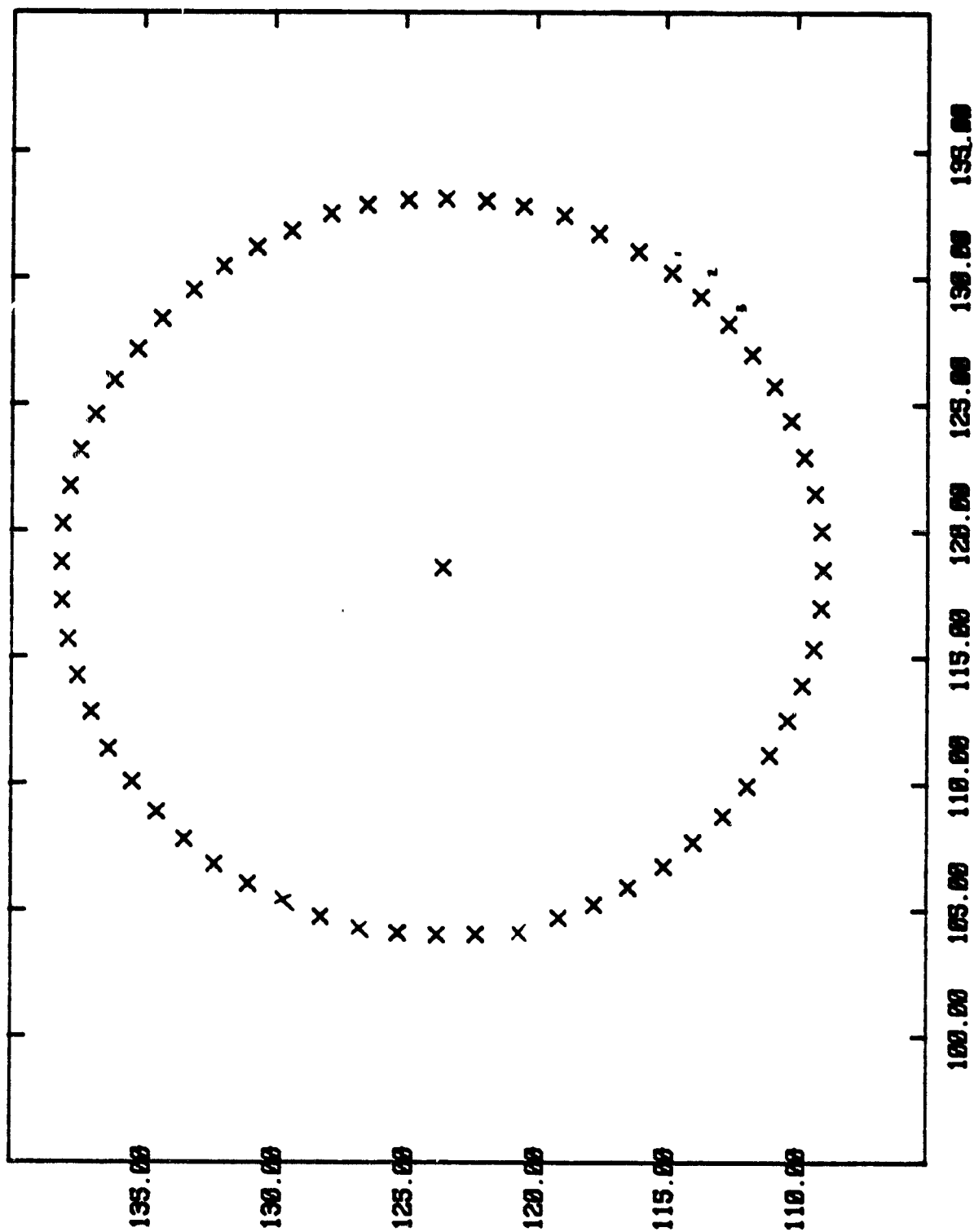


18-A-02 F2.8 0M 2 K=.29.226.347.27 10% 0°C



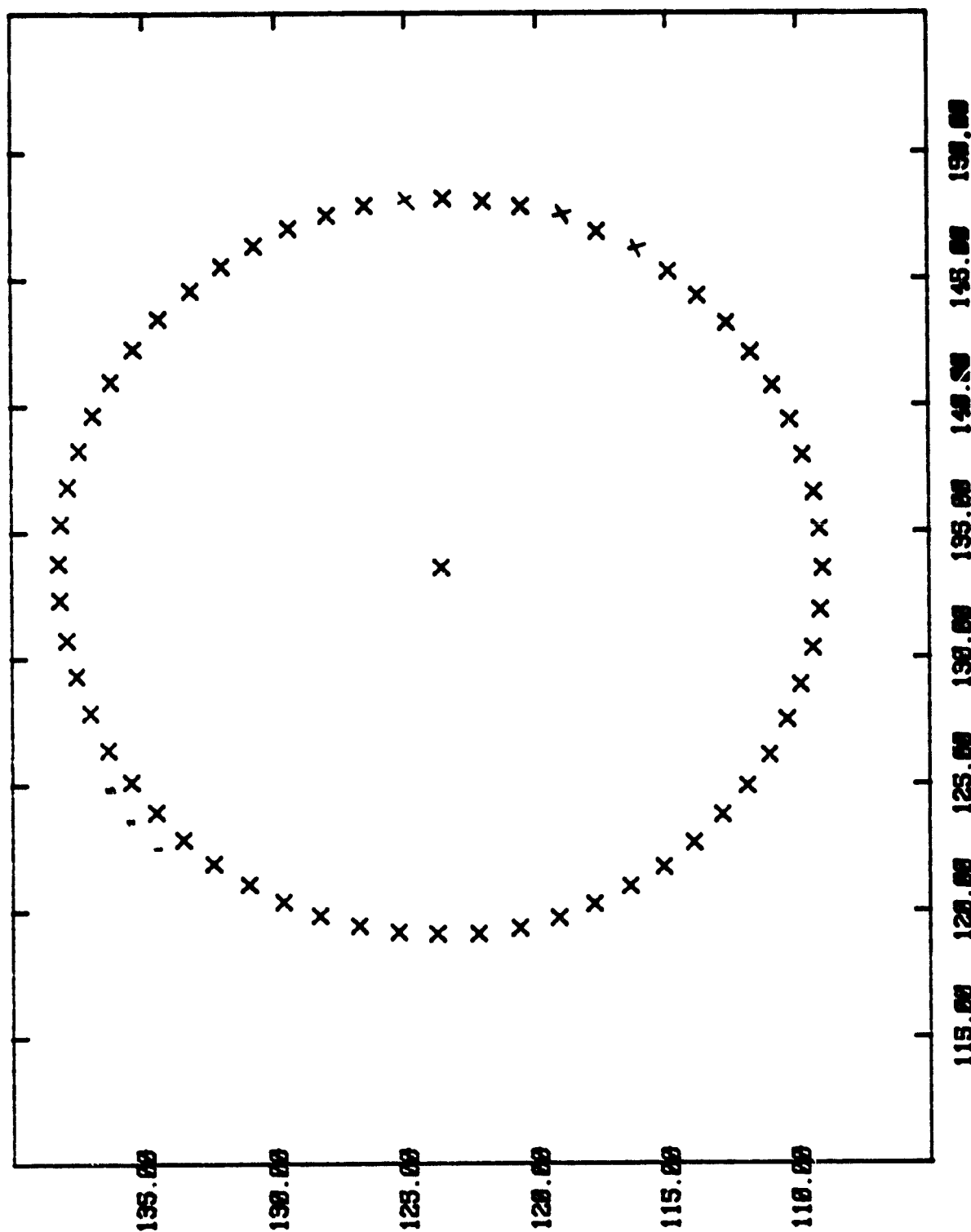
POSITION #3 S.D= 1.813 %

18-A-03 F2.8 -1.1M 2 K=.254.294.316.284 10% 0°C



POSITION #4 S.D= 3.150 %

18-A-04 F2.8 -.8M 2 K=.262.303.362.262 10% 0°C



CENTER S.D= 1.992%

18-A-05 F2.8 0M 2 K=.288.276.38.258 10% 0°C

DISK 18-A Track data file TDATA01

NDRO:
Integration delay: Coarse 1.0 Fine 1.0 Track 64.0
Thresholds: .1160E+00 .4564E+00 .1344E-02
.1838E+06 .9190E+05 .7352E+06

Constants: .33900 .31700 .36300 .30200
Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark current | star mag. | reference | | position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|---------|----------|----------|--------------------|------------|
| | | | | X | Y | X | Y | X | Y |
| .173 | 39.518 | .2082E+05 | 2.755 | 137.5 | 123.0 * | 137.5897 | 123.3343 | .1824E-02 | .2291E-01 |
| .116 | 45.794 | .1946E+05 | 2.770 | 139.0 | 123.0 | 139.0320 | 122.9785 | .8532E-03 | .8970E-03 |
| .150 | 52.099 | .1129E+05 | 2.539 | 140.5 | 122.5 | 140.4554 | 122.4150 | .4811E-03 | .4931E-03 |
| .215 | 58.378 | .2080E+05 | 2.805 | 142.0 | 122.0 | 141.8001 | 121.7923 | .7463E-03 | .1025E-02 |
| .223 | 64.625 | .1190E+05 | 2.787 | 143.0 | 121.0 | 143.0449 | 120.9278 | .1023E-02 | .6102E-03 |
| .223 | 70.895 | .2494E+05 | 2.837 | 144.0 | 120.0 | 144.2211 | 119.9364 | .5012E-03 | .1052E-02 |
| .158 | 1.798 | .1481E+05 | 2.708 | 145.5 | 119.0 * | 145.3334 | 118.7791 | .1604E-01 | .3209E-02 |
| .195 | 8.159 | .1853E+05 | 2.742 | 146.0 | 117.5 * | 146.2901 | 117.5635 | .8158E-02 | .2464E-01 |
| .237 | 14.365 | .3342E+05 | 2.936 | 147.0 | 116.0 | 147.1832 | 116.3560 | .1962E+00 | .2388E+00 |
| .094 | 20.735 | .1996E+05 | 2.783 | 148.0 | 115.0 | 147.7877 | 114.9100 | .5557E-03 | .8227E-03 |
| .114 | 26.977 | .1691E+05 | 2.702 | 148.0 | 113.5 | 148.2813 | 113.5188 | .9015E-03 | .6889E-03 |
| .187 | 33.257 | .2418E+05 | 2.859 | 149.0 | 112.0 * | 148.6870 | 111.9927 | .5191E-02 | .4814E-02 |
| .130 | 39.543 | .1228E+05 | 2.614 | 149.0 | 110.5 | 148.8875 | 110.5348 | .3821E-02 | .2799E-02 |
| .170 | 45.833 | .1183E+05 | 2.794 | 149.0 | 109.0 | 148.9607 | 109.0014 | .5277E-03 | .7175E-03 |
| .175 | 52.087 | .2442E+05 | 2.685 | 149.0 | 107.5 | 148.8537 | 107.5133 | .7575E-03 | .7495E-03 |
| .201 | 58.365 | .1722E+05 | 2.720 | 148.5 | 106.0 | 148.6213 | 106.0394 | .9404E-03 | .2622E-03 |
| .170 | 64.649 | .1643E+05 | 2.690 | 148.0 | 104.5 | 148.2266 | 104.5738 | .2221E-02 | .4395E-02 |
| .088 | 70.891 | .1905E+05 | 2.740 | 147.5 | 103.0 | 147.6526 | 103.0994 | .7442E-03 | .5655E-03 |
| .119 | 1.788 | .2105E+05 | 2.797 | 147.0 | 102.0 | 146.8878 | 101.7368 | .9472E-03 | .6265E-03 |
| .187 | 8.168 | .1936E+05 | 2.695 | 146.0 | 100.5 | 146.0584 | 100.4462 | .1403E-02 | .1115E-02 |
| .206 | 14.364 | .2092E+05 | 2.811 | 145.0 | 99.0 | 145.0737 | 99.2361 | .1021E-02 | .8986E-03 |
| .237 | 20.725 | .2829E+05 | 2.831 | 144.0 | 98.0 | 144.0158 | 98.2638 | .5851E-01 | .9201E-01 |
| .195 | 26.970 | .1513E+05 | 2.846 | 143.0 | 97.0 | 142.8111 | 97.2636 | .1041E-02 | .8818E-03 |
| .201 | 33.232 | .1504E+05 | 2.628 | 141.5 | 96.5 | 141.5437 | 96.4933 | .7021E-03 | .1125E-02 |
| .274 | 39.536 | .2549E+05 | 2.844 | 140.0 | 96.0 | 140.2053 | 95.8358 | .9312E-03 | .8749E-03 |
| .161 | 45.825 | .2313E+05 | 2.839 | 139.0 | 95.0 | 138.7499 | 95.2345 | .1052E-02 | .6710E-03 |
| .161 | 52.103 | .1690E+05 | 2.753 | 137.5 | 95.0 | 137.2905 | 94.9207 | .8373E-03 | .7635E-03 |
| .077 | 58.372 | .1475E+05 | 2.758 | 136.0 | 95.0 | 135.8327 | 94.7072 | .6391E-03 | .4312E-03 |
| .108 | 64.635 | .1260E+05 | 2.662 | 134.0 | 94.5 | 134.2569 | 94.5934 | .1237E-02 | .1214E-02 |
| .128 | 70.884 | .1504E+05 | 2.792 | 133.0 | 95.0 | 132.8154 | 94.7255 | .1148E-02 | .4451E-03 |
| .153 | 1.795 | .1846E+05 | 2.791 | 131.0 | 95.0 | 131.4635 | 94.9642 | .1863E-03 | .1055E-03 |
| .156 | 8.170 | .2546E+05 | 2.743 | 130.0 | 95.5 * | 129.7088 | 95.3624 | .1588E-02 | .1014E-01 |
| .223 | 14.360 | .2222E+05 | 2.831 | 128.5 | 96.0 * | 128.9937 | 95.9596 | .1150E-01 | .91.41E-03 |
| .161 | 20.716 | .1444E+05 | 2.690 | 127.0 | 96.5 | 126.9912 | 96.6468 | .7093E-03 | .6357E-03 |
| .147 | 26.994 | .1883E+05 | 2.707 | 126.0 | 97.5 | 125.7372 | 97.4904 | .1292E-02 | .1593E-02 |

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| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .184 | 39.520 | .2227E+05 | 2.594 | 123.5 | 99.5 | 123.4791 | 99.5000 | .1475E-02 | .1475E-02 |
| .187 | 45.814 | .1092E+05 | 2.718 | 122.5 | 101.0 | 122.5274 | 100.7271 | .2551E-02 | .1564E-02 |
| .173 | 52.115 | .1959E+05 | 2.838 | 122.0 | 102.0 | 121.7296 | 102.0048 | .7275E-02 | .9271E-02 |
| .153 | 58.356 | .2061E+05 | 2.794 | 121.0 | 103.0 | 121.0533 | 103.2704 | .7576E-02 | .4770E-02 |
| .195 | 64.650 | .1001E+05 | 2.739 | 120.5 | 105.0 | 120.5046 | 104.7311 | .7677E-02 | .7670E-02 |
| .189 | 70.895 | .2132E+05 | 2.782 | 120.0 | 106.0 | 120.1233 | 106.2145 | .9194E-02 | .8743E-02 |
| .254 | 1.805 | .2874E+05 | 2.825 | 120.0 | 108.0 | 119.9159 | 107.8242 | .2115E-01 | .2776E-01 |
| .192 | 8.176 | .1834E+05 | 2.736 | 120.0 | 109.5 | 119.0521 | 109.3838 | .4565E-02 | .1043E-01 |
| .130 | 14.376 | .1753E+05 | 2.748 | 120.0 | 111.0 | 119.9554 | 110.8437 | .4942E-02 | .1328E-02 |
| .184 | 20.730 | .1667E+05 | 2.715 | 120.0 | 112.5 | 120.2077 | 112.3529 | .1254E-02 | .1171E-02 |
| .234 | 26.973 | .2197E+05 | 2.756 | 120.5 | 114.0 | 120.5955 | 113.8237 | .1230E-01 | .3414E-01 |
| .161 | 33.263 | .2013E+05 | 2.768 | 121.0 | 115.0 | 121.1562 | 115.1851 | .4634E-02 | .1104E-02 |
| .234 | 39.538 | .1508E+05 | 2.669 | 122.0 | 116.5 | 121.8740 | 116.5632 | .7226E-02 | .7254E-02 |
| .206 | 45.835 | .2422E+05 | 2.802 | 123.0 | 118.0 | 122.7099 | 117.8518 | .1408E-01 | .3853E-01 |
| .161 | 72.114 | .1746E+05 | 2.676 | 123.5 | 119.0 | 123.6332 | 118.9726 | .5107E-02 | .3441E-02 |
| .215 | 78.988 | .2433E+05 | 2.807 | 125.0 | 120.0 | 124.7048 | 120.0366 | .1165E-02 | .2541E-02 |
| .234 | 85.005 | .1242E+05 | 2.768 | 126.0 | 121.0 | 125.9183 | 120.9925 | .4763E-02 | .3504E-02 |
| .195 | 91.006 | .2014E+05 | 2.779 | 127.0 | 122.0 | 127.2310 | 121.8925 | .7077E-02 | .2124E-02 |
| .130 | 1.784 | .1118E+05 | 2.527 | 128.5 | 122.5 | 128.6649 | 122.5423 | .9146E-02 | .3807E-02 |
| .156 | 8.130 | .1940E+05 | 2.753 | 130.0 | 123.0 | 130.1153 | 123.0597 | .4632E-02 | .3483E-02 |
| .125 | 14.362 | .5982E+04 | 2.609 | 131.5 | 123.5 | 131.4597 | 123.4451 | .1441E-02 | .1801E-02 |
| .217 | 20.732 | .3733E+05 | 2.876 | 133.0 | 124.0 | 133.0249 | 123.5398 | .1448E+00 | .2817E+00 |
| .276 | 26.984 | .1745E+05 | 2.747 | 134.5 | 124.0 | 134.4994 | 123.7592 | .1016E-02 | .6444E-02 |
| .189 | 33.259 | .2231E+05 | 2.640 | 136.0 | 123.5 | 136.0909 | 123.6206 | .4645E-02 | .7843E-02 |

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| | delta r1 | | | | | |
|---|----------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | -.04257 | .00264 | .00105 | .06393 | .03050 | .00316 |
| 1 | -.00319 | -.01026 | .09985 | .00140 | -.01856 | .00217 |
| 2 | -.01330 | -.00385 | -.01719 | -.00366 | .00517 | .01150 |
| 3 | -.03236 | -.00380 | .01659 | -.02439 | .01376 | -.01359 |
| 4 | -.02007 | .03588 | -.02278 | -.02825 | .01593 | .02273 |
| 5 | .00947 | .02286 | -.00604 | -.01228 | -.01707 | .00979 |
| 6 | .02892 | .01385 | -.00906 | .03541 | .03038 | .01343 |
| 7 | -.01004 | -.00707 | -.01528 | -.01168 | .01120 | -.01094 |
| 8 | -.01183 | .00414 | .00331 | .00668 | -.00730 | .02614 |
| 9 | -.00865 | -.02375 | .01504 | -.12472 | .02891 | .01199 |

$\mu_0 = 134.4045$ $\mu_0 = 109.1696$ $\mu_0 = 14.56022387$ $\text{std. dev.} = .02272374$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 3 | 1 | 6 | 9 | 21 | 20 | 0 |

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| | 1 | 2 | delta r1 | 4 | 5 | 7 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | | | | | | |
| 1 | | -.00346 | -.00463 | .06344 | .02577 | .00400 |
| 2 | -.01411 | -.00364 | -.01650 | -.00056 | -.01998 | -.00180 |
| 3 | -.03004 | -.00119 | .01943 | -.00251 | .00675 | .01156 |
| 4 | -.01687 | .03903 | -.01974 | -.02537 | .01690 | -.00000 |
| 5 | .01148 | | | -.01151 | -.01678 | .00990 |
| 6 | .02815 | .01252 | -.01095 | .03299 | .02737 | .00887 |
| 7 | | | -.02044 | -.01730 | | -.01736 |
| 8 | -.01859 | | -.00396 | -.00078 | -.01539 | .01849 |
| 9 | -.01631 | -.03135 | .00754 | | .02181 | -.01879 |

x0= 134.4021 y0= 109.1745 r0= 14.56322575 std.dev.= .02023317

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 0 | 4 | 8 | 20 | 15 | 12 |

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DISK 18-A Track data file TR01002

NDROI
Inte:ation delay: .1160E+00
Thresholds: .1838E+06

Coarse 1.0
Fine 1.0
Track 64.0

.4564E+00
.9190E+05
.1344E+02
.7352E+06

Constants: .29000
Displacements: 0.00000

.22600
0.00000

.34700
0.00000

.27000
0.00000

| temp | angle | dark current | star mag. | reference X Y | position X Y | standard deviation X Y |
|------|--------|-----------------|--------------|------------------|-------------------|---------------------------|
| .013 | 39.568 | .7310E+04 | 2.595 | 135.0 130.5 | 135.2066 130.6167 | .3656E-03 .6647E-03 |
| .133 | 45.821 | .2774E+05 | 2.708 | 136.0 132.0 | 136.0195 131.8950 | .8132E-03 .1075E-02 |
| .072 | 52.117 | .1239E+05 | 2.673 | 137.0 133.0 | 136.9532 133.0268 | .3146E-03 .3548E-03 |
| .043 | 58.39 | .2178E+05 | 2.669 | 138.0 134.0 | 138.0170 134.1197 | .4958E-03 .7720E-03 |
| .015 | 64.664 | .1947E+05 | 2.650 | 139.0 135.0 | 139.1964 135.0336 | .5966E-03 .5720E-03 |
| .139 | 70.877 | .2331E+05 | 2.714 | 140.5 136.0 | 140.4863 135.9016 | .8155E-03 .8106E-03 |
| .097 | 1.794 | .1427E+05 | 2.612 | 142.0 136.5 | 141.9769 136.6352 | .8478E-03 .6921E-03 |
| .072 | 8.188 | .1014E+05 | 2.703 | 143.5 137.0 | 143.4102 137.1420 | .5339E-03 .6701E-03 |
| .060 | 14.380 | .1989E+05 | 2.597 | 145.0 137.5 | 144.8505 137.5697 | .6691E-03 .8611E-03 |
| .057 | 20.724 | .1885E+05 | 2.700 | 146.5 138.0 | 146.3602 137.7730 | .4382E-03 .4533E-03 |
| .077 | 26.972 | .2318E+05 | 2.708 | 148.0 138.0 | 147.8849 137.8307 | .6912E-03 .6564E-03 |
| .027 | 33.257 | .1930E+05 | 2.688 | 149.5 138.0 | 149.3787 137.7379 | .6920E-03 .7574E-03 |
| .125 | 39.567 | .1834E+05 | 2.590 | 151.0 137.5 | 150.8904 137.4924 | .8732E-03 .1000E-02 |
| .105 | 45.822 | .9504E+04 | 2.706 | 152.5 137.0 | 152.3532 137.0503 | .6203E-03 .7367E-03 |
| .086 | 52.110 | .1460E+05 | 2.573 | 154.0 136.5 | 153.7890 136.5230 | .5987E-03 .7040E-03 |
| .153 | 58.384 | .2743E+05 | 2.715 | 155.0 136.0 | 155.8101 135.8101 | .5397E-03 .5794E-03 |
| .646 | 64.671 | .1744E+05 | 2.686 | 156.5 135.0 | 156.3501 134.9761 | .1993E-03 .5056E-03 |
| .094 | 70.884 | .1755E+05 | 2.695 | 157.5 134.0 | 157.5230 134.0023 | .6375E-03 .4638E-03 |
| .105 | 1.812 | .1137E+05 | 2.673 | 158.5 133.0 | 158.6149 132.8277 | .5913E-03 .3075E-03 |
| .063 | 8.169 | .2350E+05 | 2.577 | 159.5 131.5 | 159.5994 131.6366 | .4756E-03 .1718E-03 |
| .013 | 14.373 | .1039E+05 | 2.531 | 160.5 130.5 | 160.4173 130.4059 | .5798E-03 .2414E-03 |
| .091 | 20.731 | .1196E+05 | 2.719 | 161.0 129.0 | 161.0674 128.9658 | .2875E-03 .5438E-03 |
| .046 | 26.959 | .2689E+05 | 2.608 | 161.5 127.5 | 161.5912 127.6059 | .4637E-03 .5916E-03 |
| .088 | 33.272 | .2626E+05 | 2.723 | 162.0 126.0 | 161.9628 126.0859 | .1763E-01 .3103E-01 |
| .069 | 39.552 | .1567E+05 | 2.639 | 162.0 124.5 | 162.1733 124.6185 | .2319E-02 .6044E-02 |
| .043 | 45.822 | .2006E+05 | 2.680 | 162.0 123.0 | 162.2160 123.0500 | .6044E-03 .6392E-03 |
| .122 | 52.094 | .1911E+05 | 2.640 | 162.0 121.5 | 162.1430 121.6185 | .2233E-03 .3677E-03 |
| .133 | 58.380 | .2979E+05 | 2.737 | 162.0 120.0 | 161.8971 120.0671 | .8927E-02 .2065E-01 |
| .074 | 64.661 | .1202E+05 | 2.606 | 161.5 118.5 | 161.5306 118.6622 | .3760E-02 .6441E-02 |
| .139 | 70.859 | .1349E+05 | 2.700 | 161.0 117.0 | 160.9250 117.1807 | .9424E-03 .1075E-02 |
| .150 | 1.791 | .2637E+05 | 2.747 | 160.0 116.0 | 160.2137 115.7414 | .2734E-01 .7262E-02 |
| .088 | 8.167 | .1217E+05 | 2.524 | 159.5 114.5 | 159.3965 114.5404 | .1031E-02 .1506E-02 |
| .133 | 14.386 | .1316E+05 | 2.616 | 158.5 113.5 | 158.4237 113.4035 | .7304E-03 .3805E-03 |
| .105 | 20.729 | .1388E+05 | 2.647 | 157.5 112.5 | 157.7503 112.3306 | .4550E-03 .3231E-03 |
| .088 | 26.962 | .2158E+05 | 2.612 | 156.0 111.5 | 156.1063 111.3737 | .4511E-03 .6463E-03 |

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| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .0 | 33 | .7E+0 | 2. | 153.5 | 110.0 | 153.4916 | 109.9193 | .6919E-03 | .5625E-03 |
| .105 | 39.546 | .1715E+05 | 2.730 | 153.5 | 110.0 | 153.4916 | 109.9193 | .6919E-03 | .5625E-03 |
| .136 | 45.839 | .1495E+05 | 2.630 | 152.0 | 109.5 | 152.0586 | 109.3665 | .4643E-03 | .4997E-03 |
| .105 | 52.106 | .1029E+05 | 2.713 | 150.5 | 109.0 | 150.5852 | 108.9679 | .5891E-03 | .5156E-03 |
| .108 | 58.395 | .1047E+05 | 2.702 | 149.0 | 109.0 | 149.1219 | 108.7601 | .9954E-03 | .3662E-03 |
| .116 | 64.653 | .1412E+05 | 2.635 | 147.5 | 108.5 | 147.5892 | 108.7020 | .3289E-03 | .8000E-03 |
| .105 | 70.880 | .1087E+05 | 2.716 | 146.0 | 109.0 | 146.0820 | 108.7890 | .3544E-03 | .3477E-03 |
| .114 | 1.798 | .9414E+04 | 2.717 | 144.5 | 109.0 | 144.4734 | 109.0299 | .5714E-03 | .2179E-03 |
| .130 | 8.178 | .1771E+05 | 2.608 | 143.0 | 109.5 | 142.9978 | 109.4774 | .7342E-03 | .6605E-03 |
| .116 | 14.394 | .1777E+05 | 2.711 | 141.5 | 110.0 | 141.6104 | 110.0134 | .3313E-03 | .4277E-03 |
| .057 | 20.755 | .1286E+05 | 2.644 | 140.0 | 111.0 | 140.2473 | 110.7091 | .2789E-01 | .9449E-02 |
| .100 | 26.992 | .2242E+05 | 2.602 | 139.0 | 111.5 | 139.0099 | 111.5640 | .6639E-03 | .1534E-03 |
| .144 | 33.254 | .1375E+05 | 2.592 | 138.0 | 112.5 | 137.8982 | 112.5287 | .6670E-03 | .3094E-03 |
| .130 | 39.548 | .2028E+05 | 2.641 | 137.0 | 113.5 | 136.8071 | 113.6301 | .5699E-03 | .5976E-03 |
| .060 | 45.819 | .1545E+05 | 2.659 | 136.0 | 115.0 | 135.8678 | 114.7664 | .9565E-03 | .449E-03 |
| .164 | 52.099 | .2185E+05 | 2.770 | 135.0 | 116.0 | 135.0855 | 116.0484 | .7949E-03 | .5894E-03 |
| .206 | 58.376 | .1153E+05 | 2.676 | 134.5 | 117.5 | 134.3244 | 117.3910 | .6248E-02 | .6458E-02 |
| .116 | 64.647 | .1330E+05 | 2.672 | 134.0 | 119.0 | 133.8398 | 118.7744 | .2039E-02 | .4393E-02 |
| .175 | 70.880 | .1494E+05 | 2.689 | 133.5 | 120.5 | 133.4348 | 120.3003 | .2323E-02 | .1794E-02 |
| .161 | 1.801 | .2160E+05 | 2.726 | 133.0 | 122.0 | 133.2179 | 121.9319 | .7041E-03 | .3022E-02 |
| .128 | 8.185 | .2340E+05 | 2.638 | 133.0 | 123.5 | 133.1517 | 123.4484 | .1088E-01 | .7789E-02 |
| .150 | 14.386 | .9664E+04 | 2.700 | 133.0 | 125.0 | 133.2483 | 124.9147 | .5148E-03 | .5642E-03 |
| .128 | 20.721 | .8752E+04 | 2.565 | 133.5 | 126.5 | 133.4908 | 126.4413 | .3618E-03 | .3831E-03 |
| .243 | 26.949 | .2707E+05 | 2.727 | 134.0 | 128.0 | 133.9022 | 127.8498 | .5653E-03 | .5507E-03 |
| .173 | 33.257 | .1174E+05 | 2.741 | 134.5 | 129.5 | 134.4068 | 129.2909 | .1014E-01 | .1461E-01 |

ORIGINAL PAGE IS
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| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.05478 | -.02709 | -.03060 | -.00239 | -.02846 | .00332 |
| 1 | -.00328 | -.02172 | .03920 | .02307 | .02011 | .02285 |
| 2 | .03327 | .00140 | .04074 | -.00123 | .00909 | .00153 |
| 3 | -.04086 | -.00414 | .03053 | -.01556 | -.00323 | -.01907 |
| 4 | -.02291 | -.04305 | -.02518 | -.01011 | .01239 | -.00764 |
| 5 | .03524 | .02501 | .00115 | .01667 | -.01071 | .01104 |
| 6 | -.02190 | -.00421 | .01501 | .00422 | -.00668 | -.00367 |
| 7 | .02682 | -.00143 | .01567 | .03374 | .00844 | -.02128 |
| 8 | -.02735 | .00451 | -.02965 | .04737 | .00948 | .01119 |
| 9 | -.01408 | -.00677 | -.00946 | .00603 | -.01318 | .04353 |

x0= 147.7020 y0= 123.2533 r0= 14.55841160 std.dev.= .02263819

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 5 | 6 | 14 | 12 | 22 | 0 |

ORIGINAL PAGE IS
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| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.05227 | -.02477 | -.02849 | -.00051 | -.02680 | .00475 |
| 1 | -.00211 | -.02077 | .03993 | .02359 | .02042 | .02298 |
| 2 | .03322 | .00118 | .04039 | -.00171 | .00851 | .00037 |
| 3 | -.04158 | .00490 | .02976 | -.01632 | -.00395 | |
| 4 | -.02348 | -.04351 | -.02552 | | .01236 | -.00749 |
| 5 | | .02556 | .00183 | .01776 | -.00949 | -.00760 |
| 6 | -.02023 | -.00231 | .01716 | .00655 | -.00414 | -.00074 |
| 7 | .02973 | .00165 | .01889 | | .01188 | .01776 |
| 8 | -.02377 | .00812 | -.02602 | .05098 | .01306 | .01470 |
| 9 | -.01066 | | -.00627 | .00908 | -.01029 | |

x0= 147.7039 y0= 123.2544 r0= 14.55698395 std.dev.= .02182580

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 2 | 3 | 2 | 15 | 11 | 21 | 6 |

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DISK 18-A Track data file TDATA03

NDRN: Coarse Fine Track
 Integration delay: 1.0 1.0 64.0
 Thresholds: .1160E+00 .4564E+00 .1344E-02
 .7298E+06 .9190E+05 .7352E+06

Constants: .25400 .29400 .21600 .28400
 Displacements: 0.00000 0.00000 0.00000 0.00000

| temp | angle | dark | star | reference | | position | | standard deviation | |
|------|--------|-----------|-------|-----------|---------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| .248 | 20.692 | .1740E+05 | 2.787 | 124.5 | 125.5 | 124.4272 | 125.6637 | .5771E-03 | .5764E-03 |
| .209 | 26.955 | .9681E+04 | 2.619 | 123.0 | 126.5 * | 123.1551 | 126.4721 | .2180E-01 | .3700E-02 |
| .217 | 33.243 | .2582E+05 | 2.746 | 122.0 | 127.5 | 122.0177 | 127.4514 | .9054E-02 | .1467E-01 |
| .201 | 39.504 | .1362E+05 | 2.695 | 121.0 | 128.5 | 120.9763 | 128.5261 | .5314E-03 | .1401E-03 |
| .248 | 45.825 | .1940E+05 | 2.769 | 120.0 | 129.5 | 120.0173 | 129.7310 | .7302E-03 | .3489E-03 |
| .153 | 52.107 | .1888E+05 | 2.609 | 119.0 | 131.0 * | 119.1839 | 130.9822 | .9902E-02 | .6113E-02 |
| .192 | 58.364 | .1232E+05 | 2.788 | 118.5 | 132.5 | 118.5078 | 132.3499 | .4210E-03 | .8401E-03 |
| .220 | 64.646 | .1927E+05 | 2.776 | 118.0 | 133.5 | 117.9996 | 133.7431 | .1073E-02 | .5363E-03 |
| .187 | 70.888 | .1825E+05 | 2.767 | 117.5 | 135.0 | 117.5937 | 135.2148 | .3422E-03 | .5508E-03 |
| .237 | 1.791 | .1108E+05 | 2.741 | 117.5 | 137.0 * | 117.3554 | 136.8252 | .2883E-02 | .9102E-02 |
| .229 | 8.186 | .9778E+04 | 2.719 | 117.5 | 138.5 | 117.3210 | 138.3824 | .9386E-03 | .4899E-03 |
| .327 | 14.367 | .2592E+05 | 2.762 | 117.5 | 140.0 | 117.3863 | 139.8439 | .3559E-03 | .5477E-03 |
| .248 | 20.722 | .2182E+05 | 2.848 | 117.5 | 141.5 | 117.6230 | 141.3808 | .1510E-01 | .2949E-01 |
| .189 | 26.965 | .1453E+05 | 2.646 | 118.0 | 143.0 * | 118.0725 | 142.7866 | .1828E-02 | .4681E-02 |
| .229 | 33.257 | .1466E+05 | 2.799 | 118.5 | 144.5 * | 118.5840 | 144.2601 | .1665E-02 | .4882E-02 |
| .195 | 39.513 | .1853E+05 | 2.827 | 119.5 | 145.5 | 119.3159 | 145.5074 | .5666E-03 | .8270E-03 |
| .178 | 45.826 | .1446E+05 | 2.617 | 120.0 | 147.0 * | 120.1711 | 146.7907 | .2233E-02 | .6341E-02 |
| .271 | 52.091 | .2990E+05 | 2.644 | 121.0 | 148.0 | 121.1351 | 147.9660 | .4672E-03 | .1813E-02 |
| .257 | 58.388 | .1059E+05 | 2.644 | 122.5 | 149.0 * | 122.2108 | 149.0263 | .1142E-01 | .8000E-02 |
| .262 | 64.670 | .2100E+05 | 2.680 | 123.5 | 150.0 | 123.3718 | 149.9955 | .7749E-03 | .4834E-03 |
| .192 | 70.884 | .1244E+05 | 2.623 | 124.5 | 151.0 | 124.6443 | 150.7786 | .4173E-03 | .7413E-02 |
| .189 | 1.806 | .2255E+05 | 2.698 | 126.0 | 151.5 | 126.1233 | 151.5082 | .6602E-03 | .5489E-03 |
| .324 | 8.163 | .2465E+05 | 2.712 | 127.5 | 152.0 | 127.5339 | 152.0351 | .7918E-03 | .8093E-03 |
| .296 | 14.366 | .1379E+05 | 2.666 | 129.0 | 152.5 | 129.0035 | 152.4355 | .1778E-03 | .5675E-03 |
| .276 | 20.727 | .1362E+05 | 2.728 | 130.5 | 152.5 | 130.4706 | 152.6291 | .2819E-03 | .7073E-03 |
| .254 | 26.960 | .4390E+04 | 2.751 | 132.0 | 152.5 | 131.9554 | 152.6999 | .3068E-02 | .4343E-03 |
| .282 | 33.241 | .1384E+05 | 2.697 | 133.5 | 152.5 | 133.4899 | 152.6025 | .7488E-03 | .7745E-03 |
| .271 | 39.533 | .1000E+05 | 2.717 | 135.0 | 152.5 | 135.0782 | 152.3576 | .4274E-03 | .3911E-03 |
| .296 | 45.834 | .2569E+05 | 2.712 | 136.5 | 152.0 | 136.4593 | 151.9562 | .1103E-02 | .3486E-03 |
| .201 | 52.105 | .2390E+05 | 2.668 | 138.0 | 151.5 | 137.8992 | 151.4058 | .5701E-03 | .4477E-03 |
| .203 | 58.364 | .1476E+05 | 2.633 | 139.0 | 150.5 | 139.1859 | 150.7144 | .4174E-03 | .1457E-01 |
| .276 | 64.645 | .2038E+05 | 2.729 | 140.5 | 150.0 | 140.4577 | 149.9233 | .5196E-03 | .2848E-03 |
| .288 | 70.873 | .1252E+05 | 2.683 | 141.5 | 149.0 | 141.4799 | 149.8979 | .7397E-03 | .2765E-03 |
| .321 | 1.798 | .3690E+05 | 2.701 | 143.0 | 148.0 * | 143.8312 | 147.7327 | .6799E-02 | .1761E-02 |
| .296 | 8.165 | .9044E+04 | 2.558 | 143.5 | 146.5 | 143.7641 | 146.5795 | .5531E-02 | .4564E-02 |

ORIGINAL PAGE IS
OF POOR QUALITY

TDR104

| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .377 | 14.723 | .2840E+05 | 2.704 | 145.0 | 144.0 | 145.2073 | 143.9600 | .5303E-03 | .1017E-02 |
| .217 | 26.962 | .9170E+04 | 2.563 | 145.5 | 142.5 | 145.7671 | 142.5738 | .4318E-02 | .2900E-02 |
| .304 | 33.249 | .1198E+05 | 2.642 | 146.0 | 141.0 | 146.1065 | 141.0174 | .5176E-03 | .6097E-03 |
| .257 | 39.547 | .2118E+05 | 2.673 | 146.5 | 139.5 | 146.3293 | 139.5706 | .4787E-03 | .3874E-03 |
| .268 | 45.826 | .2037E+05 | 2.669 | 146.5 | 138.0 | 146.4093 | 138.0557 | .7794E-03 | .2014E-03 |
| .271 | 52.100 | .1581E+05 | 2.656 | 146.5 | 136.5 | 146.3040 | 136.5485 | .2421E-02 | .7341E-02 |
| .265 | 58.397 | .2034E+05 | 2.623 | 146.0 | 135.0 | 146.0417 | 135.0123 | .4713E-03 | .4721E-03 |
| .296 | 64.643 | .1848E+05 | 2.711 | 145.5 | 133.5 | 145.6872 | 133.6309 | .4683E-03 | .6975E-03 |
| .299 | 70.891 | .2634E+05 | 2.687 | 145.0 | 132.0 | 145.0861 | 132.1515 | .2043E-02 | .2812E-02 |
| .260 | 1.805 | .1385E+05 | 2.698 | 144.5 | 130.5 | 144.3709 | 130.7129 | .8540E-02 | .2110E-01 |
| .324 | 8.195 | .1823E+05 | 2.731 | 143.5 | 129.5 | 143.5138 | 129.4657 | .5707E-03 | .6336E-03 |
| .282 | 14.369 | .1281E+05 | 2.755 | 142.5 | 128.5 | 142.5541 | 128.3260 | .6005E-03 | .5673E-03 |
| .243 | 20.718 | .1904E+05 | 2.769 | 141.5 | 127.0 | 141.4786 | 127.2258 | .5136E-03 | .5172E-03 |
| .206 | 26.989 | .1019E+05 | 2.655 | 140.5 | 126.5 | 140.3092 | 126.3012 | .3090E-03 | .3641E-03 |
| .330 | 33.261 | .2121E+05 | 2.675 | 139.0 | 125.5 | 138.9946 | 125.5048 | .8581E-03 | .4663E-03 |
| .324 | 39.576 | .1215E+05 | 2.701 | 137.5 | 125.0 | 137.6050 | 124.8231 | .6442E-03 | .5139E-03 |
| .282 | 45.824 | .1310E+05 | 2.731 | 136.5 | 124.5 | 136.2308 | 124.2904 | .4891E-03 | .5629E-03 |
| .352 | 52.101 | .2016E+05 | 2.716 | 134.5 | 124.0 | 134.7245 | 123.9149 | .4816E-03 | .8001E-03 |
| .276 | 58.389 | .2031E+05 | 2.760 | 133.5 | 123.5 | 133.2698 | 123.6963 | .7942E-03 | .1020E-02 |
| .231 | 64.622 | .1092E+05 | 2.721 | 131.5 | 123.5 | 131.7024 | 123.6526 | .8553E-03 | .5963E-03 |
| .220 | 70.884 | .1991E+05 | 2.768 | 130.5 | 123.5 | 130.2231 | 123.7199 | .8004E-03 | .7193E-03 |
| .338 | 1.798 | .2581E+05 | 2.702 | 128.5 | 124.0 | 128.6379 | 123.9509 | .3463E-03 | .6053E-03 |
| .327 | 8.193 | .1367E+05 | 2.658 | 127.0 | 124.5 | 127.1407 | 124.3942 | .3958E-03 | .5747E-03 |
| .268 | 14.359 | .1533E+05 | 2.655 | 126.0 | 125.0 | 125.8251 | 124.9114 | .4506E-03 | .6472E-03 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.00833 | .02469 | -.00464 | -.01478 | -.01430 | .01639 |
| 1 | .01011 | -.00470 | .01484 | .01322 | -.01225 | .01919 |
| 2 | .04339 | -.01046 | .05686 | -.01600 | -.02348 | -.02121 |
| 3 | -.02097 | .01175 | -.01654 | .02343 | -.01782 | .00721 |
| 4 | -.01510 | -.01002 | -.01547 | .00868 | -.00578 | .00974 |
| 5 | -.01167 | .02347 | -.01583 | .00781 | .03589 | .00240 |
| 6 | .00918 | .04737 | -.01266 | -.00464 | .00742 | -.00841 |
| 7 | -.01503 | .00072 | -.01474 | .01788 | -.00211 | -.01357 |
| 8 | .02064 | .01858 | -.01490 | -.02147 | -.00147 | -.01366 |
| 9 | -.01214 | -.03673 | -.01294 | .02370 | .00545 | .01095 |

x0= 131.8547 y0= 138.1627 r0= 14.54760933 std.dev.= .01884822

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 2 | 2 | 9 | 29 | 17 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | -.00543 | | | -.01190 | .01146 | .01215 |
| 1 | .01278 | -.00213 | .01729 | .01552 | -.01012 | .02016 |
| 2 | | -.00886 | .05826 | -.01479 | -.02248 | .02042 |
| 3 | | .01214 | -.01635 | -.02343 | -.01890 | .00686 |
| 4 | -.01558 | -.01064 | -.01621 | .00784 | -.00669 | .00377 |
| 5 | | .02244 | -.01686 | .00682 | .03495 | .00152 |
| 6 | .00840 | .04669 | -.01321 | -.00506 | .00716 | -.00350 |
| 7 | -.01494 | .00099 | -.01425 | | -.00120 | -.01247 |
| 8 | .02195 | .02009 | -.01320 | -.01958 | .00059 | -.01143 |
| 9 | -.00977 | -.03422 | -.01032 | .02643 | .00826 | .01381 |

x0= 131.8559 y0= 138.1642 r0= 14.54666519 std.dev.= .01813333

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 1 | 2 | 8 | 24 | 18 | 6 |

ORIGINAL PAGE IS
OF POOR QUALITY

DISK 18-A

Track data file TDATA04

| | | | |
|--------------------|-----------|-----------|-----------|
| | Coarse | Fine | Track |
| NDRN: | 1.0 | 1.0 | 64.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .1344E-02 |
| Thresholds: | .1938E+06 | .9190E+05 | .7352E+06 |

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .26200 | .30300 | .36200 | .26200 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| temp | angle | dark | star | reference | | position | | standard deviation | |
|------|--------|-----------|-------|-----------|---------|----------|----------|--------------------|-----------|
| | | current | mag. | X | Y | X | Y | X | Y |
| .240 | 8.153 | .1548E+05 | 2.692 | 130.0 | 115.0 * | 130.2009 | 114.8000 | .8559E-02 | .7230E-02 |
| .279 | 14.372 | .1804E+05 | 2.750 | 129.5 | 113.5 * | 129.2456 | 113.6800 | .2168E-02 | .1769E-01 |
| .299 | 20.711 | .1653E+05 | 2.664 | 128.0 | 112.5 * | 128.1613 | 112.6159 | .1665E-02 | .1180E-01 |
| .240 | 26.978 | .2456E+05 | 2.709 | 127.0 | 111.5 * | 126.9789 | 111.6785 | .4352E-02 | .2979E-01 |
| .231 | 33.228 | .1489E+05 | 2.686 | 125.5 | 111.0 | 125.7146 | 110.8520 | .1012E-02 | .9483E-03 |
| .268 | 39.538 | .2067E+05 | 2.733 | 124.5 | 110.0 | 124.3558 | 110.2262 | .5062E-02 | .5359E-02 |
| .302 | 45.825 | .2125E+05 | 2.722 | 123.0 | 109.5 * | 122.9308 | 109.6936 | .3671E-02 | .2527E-01 |
| .290 | 52.090 | .1325E+05 | 2.774 | 121.5 | 109.5 | 121.4741 | 109.2946 | .3892E-03 | .9102E-03 |
| .271 | 58.367 | .1212E+05 | 2.723 | 120.0 | 109.0 | 119.9851 | 109.0367 | .6209E-03 | .7377E-03 |
| .290 | 64.657 | .9789E+04 | 2.768 | 118.5 | 109.0 | 118.4609 | 108.9941 | .6821E-03 | .1077E-02 |
| | | | | | | | | | |
| .279 | 70.880 | .1258E+05 | 2.739 | 117.0 | 109.0 | 116.9409 | 109.0478 | .4231E-03 | .1003E-02 |
| .293 | 1.802 | .1482E+05 | 2.718 | 115.5 | 109.5 | 115.3302 | 109.3452 | .6159E-03 | .6671E-03 |
| .217 | 8.169 | .2509E+05 | 2.762 | 114.0 | 110.0 | 113.8906 | 109.7859 | .1910E-02 | .2474E-02 |
| .229 | 14.369 | .8741E+04 | 2.697 | 112.5 | 110.5 | 112.5116 | 110.3205 | .6264E-03 | .4271E-03 |
| .237 | 20.715 | .1896E+05 | 2.702 | 111.0 | 111.0 * | 111.1336 | 111.0080 | .5030E-02 | .9547E-02 |
| .304 | 26.962 | .2822E+05 | 2.771 | 110.0 | 112.0 | 109.9103 | 111.8590 | .1593E-02 | .2360E-02 |
| .299 | 33.245 | .1285E+05 | 2.734 | 108.5 | 113.0 * | 108.7323 | 112.7867 | .1961E-01 | .1339E-02 |
| .302 | 39.533 | .1979E+05 | 2.737 | 107.5 | 114.0 | 107.6781 | 113.9150 | .1142E-02 | .4849E-03 |
| .245 | 45.807 | .1781E+05 | 2.708 | 106.5 | 115.0 | 106.7290 | 115.0285 | .5030E-03 | .9465E-03 |
| .271 | 52.094 | .1302E+05 | 2.743 | 106.0 | 116.5 | 105.9130 | 116.3808 | .5455E-03 | .4639E-03 |
| | | | | | | | | | |
| .257 | 58.381 | .1714E+05 | 2.808 | 105.5 | 117.5 | 105.2173 | 117.6961 | .2378E-03 | .4444E-03 |
| .229 | 64.627 | .1779E+05 | 2.692 | 104.5 | 119.0 | 104.7065 | 119.0570 | .5840E-03 | .8525E-03 |
| .293 | 70.884 | .1270E+05 | 2.720 | 104.5 | 120.5 | 104.2768 | 120.5710 | .6721E-03 | .5277E-03 |
| .304 | 1.805 | .2447E+05 | 2.718 | 104.0 | 122.0 | 104.0509 | 122.2275 | .4903E-03 | .6515E-03 |
| .248 | 8.166 | .2170E+05 | 2.775 | 104.0 | 123.5 | 104.0271 | 123.7269 | .4972E-03 | .2265E-03 |
| .299 | 14.378 | .1380E+05 | 2.699 | 104.0 | 125.0 | 104.0918 | 125.2299 | .7842E-03 | .5335E-03 |
| .321 | 20.714 | .9867E+04 | 2.753 | 104.5 | 126.5 | 104.3591 | 126.6804 | .4284E-03 | .4473E-03 |
| .380 | 26.967 | .2222E+05 | 2.752 | 104.5 | 128.0 | 104.7523 | 128.1845 | .4835E-03 | .5890E-03 |
| .276 | 33.241 | .1758E+05 | 2.794 | 105.5 | 129.5 | 105.3117 | 129.5721 | .4494E-03 | .3021E-03 |
| .234 | 39.534 | .1832E+05 | 2.645 | 106.0 | 131.0 | 106.0343 | 130.9113 | .1781E-02 | .7605E-02 |
| | | | | | | | | | |
| .375 | 45.788 | .2506E+05 | 2.741 | 107.0 | 132.0 * | 106.8332 | 132.2248 | .3594E-02 | .4951E-02 |
| .327 | 52.100 | .2298E+05 | 2.754 | 108.0 | 133.5 * | 107.8087 | 133.4087 | .2564E-02 | .1619E-01 |
| .257 | 58.373 | .8637E+04 | 2.599 | 109.0 | 134.5 | 108.8877 | 134.4570 | .4552E-03 | .1594E-03 |
| .316 | 64.621 | .2514E+05 | 2.721 | 110.0 | 135.5 | 110.0804 | 135.3725 | .1815E-01 | .1593E-01 |
| .386 | 70.852 | .2131E+05 | 2.790 | 111.5 | 136.0 | 111.3604 | 136.2328 | .6694E-03 | .7124E-04 |

ORIGINAL PAGE IS
OF POOR QUALITY

TN81-04

| | | | | | | | | | |
|------|--------|------------|-------|-------|---------|----------|----------|-----------|-----------|
| .285 | 1.000 | .1000E+05 | 2.601 | 115.0 | 137.0 * | 114.0905 | 135.9031 | .7000E-03 | .6000E-02 |
| .302 | 8.180 | .1707E+05 | 2.695 | 114.5 | 137.5 | 114.2667 | 137.4602 | .7413E-03 | .4816E-03 |
| .310 | 14.369 | .2043E+05 | 2.719 | 115.5 | 138.0 | 115.7003 | 137.8279 | .4553E-03 | .6525E-03 |
| .290 | 20.716 | .2026E+05 | 2.721 | 117.5 | 138.0 * | 117.2128 | 138.0745 | .2987E-02 | .4871E-02 |
| .307 | 27.000 | .1902E+05 | 2.693 | 118.5 | 138.0 | 118.7323 | 138.0871 | .7860E-03 | .1487E-03 |
| | | | | | | | | | |
| .262 | 33.240 | .2003E+05 | 2.720 | 120.5 | 139.0 * | 120.2249 | 138.0523 | .2143E-02 | .4444E-02 |
| .262 | 39.532 | .2142E+05 | 2.711 | 121.5 | 139.0 | 121.7473 | 137.7565 | .6075E-03 | .6868E-03 |
| .274 | 45.832 | .1552E+05 | 2.665 | 123.0 | 137.5 | 123.1871 | 137.3455 | .4170E-03 | .5863E-03 |
| .282 | 52.095 | .1169E+05 | 2.696 | 124.5 | 137.0 | 124.5758 | 136.7789 | .8634E-03 | .1146E-02 |
| .352 | 58.370 | .2661E+05 | 2.747 | 126.0 | 136.0 | 125.9211 | 136.0780 | .4741E-03 | .8984E-03 |
| .229 | 64.643 | .2142E+05 | 2.682 | 127.0 | 135.0 | 127.1541 | 135.2290 | .5369E-03 | .5914E-03 |
| .265 | 70.898 | .2473E+05 | 2.746 | 128.5 | 134.0 | 128.3603 | 134.3048 | .3352E-01 | .4061E-01 |
| .290 | 1.794 | .1036E+05 | 2.724 | 129.5 | 133.0 | 129.4898 | 133.0955 | .7234E-03 | .7050E-03 |
| .400 | 8.178 | .2336E+05 | 2.749 | 130.5 | 132.0 | 130.4457 | 131.9246 | .6301E-03 | .6134E-03 |
| .293 | 14.371 | .2522E+04 | 2.643 | 131.5 | 130.5 * | 131.1958 | 130.6562 | .8430E-02 | .9074E-02 |
| | | | | | | | | | |
| .375 | 20.721 | -.1064E+04 | 2.719 | 132.0 | 129.5 | 131.8351 | 129.3504 | .2210E-02 | .3995E-03 |
| .383 | 26.990 | .6394E+04 | 2.836 | 132.5 | 128.0 | 132.5367 | 127.8619 | .2596E-02 | .1804E-03 |
| .279 | 33.256 | .8404E+04 | 2.596 | 133.0 | 126.5 | 132.8571 | 126.4665 | .5789E-03 | .5455E-03 |
| .318 | 39.534 | .1123E+05 | 2.713 | 133.0 | 125.0 | 133.0736 | 124.9035 | .4043E-03 | .7159E-03 |
| .310 | 45.839 | .2091E+05 | 2.657 | 133.0 | 123.5 | 133.1120 | 123.4532 | .3197E-03 | .6024E-03 |
| .352 | 52.087 | .2210E+05 | 2.730 | 133.0 | 122.0 | 133.0372 | 121.9139 | .7221E-03 | .9177E-03 |
| .358 | 58.365 | .1227E+05 | 2.644 | 133.0 | 120.5 | 132.8201 | 120.4927 | .5188E-03 | .4521E-03 |
| .302 | 64.654 | .3761E+04 | 2.731 | 132.5 | 119.0 | 132.4531 | 118.9313 | .9174E-03 | .8252E-03 |
| .313 | 70.877 | .8975E+04 | 2.728 | 131.5 | 117.5 | 131.7469 | 117.5934 | .9127E-03 | .4075E-03 |
| .327 | 1.812 | .2704E+05 | 2.684 | 131.0 | 116.0 | 131.0417 | 116.0561 | .9345E-03 | .1657E-02 |

ORIGINAL PAGE IS
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| | 1 | 2 | delta ri 3 | 4 | 5 | 6 |
|---|---------|---------|---------------|---------|---------|---------|
| 0 | .00841 | -.00847 | -.00418 | -.00240 | .01819 | -.02750 |
| 1 | -.02850 | -.00824 | .02406 | -.00335 | .03227 | .00435 |
| 2 | -.02638 | -.01472 | .01413 | -.01892 | .01302 | -.02782 |
| 3 | .01806 | -.02469 | .00809 | .00175 | .02856 | .00795 |
| 4 | -.02752 | .00428 | -.01887 | .00443 | -.00702 | -.03857 |
| 5 | .02392 | .02902 | .02034 | -.00788 | .03186 | -.07721 |
| 6 | .00257 | .00695 | .03286 | -.01533 | .04467 | .00716 |
| 7 | -.00123 | -.01914 | -.02082 | -.05081 | -.00053 | -.02253 |
| 8 | -.01097 | -.05376 | -.06377 | .07585 | .04057 | .02534 |
| 9 | .00075 | .01746 | .03185 | .08802 | -.08338 | .00479 |

$\mu = 118.5550$ $\sigma = 123.5470$ $\sigma = 14.55650520$ $\text{std.dev.} = .02986608$

HISTOGRAM DEVIATION $\geq e$

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 6 | 2 | 6 | 14 | 11 | 21 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

delta ri

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .00612 | | | | .01612 | -.02949 |
| 1 | | -.01001 | .02241 | -.00486 | .03090 | .00564 |
| 2 | -.02744 | -.01563 | .01338 | -.01951 | | -.02810 |
| 3 | .01791 | -.02469 | .00822 | .00199 | .02897 | .00801 |
| 4 | -.02697 | .00489 | -.01821 | .00513 | -.00630 | -.02985 |
| 5 | .02463 | | .02097 | | .03236 | |
| 6 | .00286 | .00714 | .03292 | -.01540 | .04445 | .00679 |
| 7 | -.00175 | -.01981 | -.02165 | -.05180 | | .04084 |
| 8 | -.01242 | -.05535 | -.06548 | .07401 | .03963 | .02280 |
| 9 | -.00137 | .01928 | .02961 | .08574 | -.08569 | .00242 |

x0= 118.5563 r0= 123.5462 r0= 14.55729580 std.dev.= .03150113

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 6 | 2 | 4 | 13 | 11 | 15 | 9 |

ORIGINAL PAGE IS
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DISK 18-A

Track data file TDATA05

| | Coarse 1.0 | Fine 1.0 | Track 64.0 |
|--------------------|---------------|-------------|---------------|
| NDRO: | .1160E+00 | .4564E+00 | .1344E-02 |
| Integration delay: | .2298E+06 | .9190E+05 | .7352E+06 |

| | .28800 | .27600 | .38000 | .25800 |
|----------------|---------|---------|---------|---------|
| Constants: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| Displacements: | | | | |

| temp | angle | dark current | star mag. | reference | | Position | | standard deviation | |
|------|--------|-----------------|--------------|-----------|---------|----------|----------|--------------------|-----------|
| | | | | X | Y | X | Y | X | Y |
| .184 | 52.065 | .2261E+05 | 2.546 | 123.0 | 133.5 | 122.8469 | 133.5199 | .8514E-03 | .6643E-03 |
| .156 | 58.262 | .9014E+04 | 2.446 | 124.0 | 134.5 | 123.9122 | 134.5409 | .2966E-03 | .4061E-03 |
| .091 | 64.632 | .2421E+05 | 2.510 | 125.0 | 135.5 | 125.1195 | 135.4875 | .4737E-03 | .5021E-03 |
| .142 | 70.870 | .1371E+05 | 2.589 | 126.5 | 136.5 | 126.3944 | 136.3539 | .4056E-03 | .5026E-03 |
| .167 | 1.798 | .1349E+05 | 2.596 | 128.0 | 137.0 * | 127.8520 | 137.0276 | .2358E-01 | .6104E-02 |
| .178 | 8.149 | .1800E+05 | 2.559 | 129.5 | 137.5 * | 129.3003 | 137.5880 | .3470E-03 | .1060E-02 |
| .164 | 14.389 | .2065E+05 | 2.570 | 130.5 | 138.0 | 130.7296 | 137.9620 | .6295E-03 | .3992E-03 |
| .254 | 20.727 | .3567E+04 | 2.659 | 132.5 | 138.0 * | 132.3121 | 138.2170 | .8597E-01 | .4509E-02 |
| .226 | 26.990 | .2136E+05 | 2.606 | 134.0 | 138.0 * | 133.7495 | 138.2552 | .2530E-02 | .1350E-02 |
| .192 | 33.243 | .1062E+05 | 2.656 | 135.5 | 138.0 | 135.3315 | 138.1731 | .1414E-02 | .1812E-02 |
| .198 | 39.558 | .2400E+05 | 2.610 | 137.0 | 138.0 * | 136.7941 | 137.9126 | .1027E-01 | .1385E-02 |
| .161 | 45.821 | .1886E+05 | 2.505 | 138.0 | 137.5 | 138.2320 | 137.4712 | .8576E-03 | .3472E-03 |
| .144 | 52.097 | .1241E+05 | 2.594 | 139.5 | 137.0 | 139.6212 | 136.9245 | .7167E-03 | .8287E-03 |
| .158 | 58.361 | .2915E+05 | 2.667 | 141.0 | 136.0 | 140.9542 | 136.2378 | .8464E-02 | .1762E-01 |
| .072 | 64.623 | .2374E+05 | 2.503 | 142.0 | 135.5 | 142.2146 | 135.3838 | .4173E-03 | .7075E-03 |
| .116 | 70.877 | .9771E+04 | 2.420 | 143.5 | 134.5 | 143.4372 | 134.4190 | .6270E-03 | .4346E-03 |
| .136 | 1.798 | .1246E+05 | 2.596 | 144.5 | 133.0 * | 144.5476 | 133.2445 | .1450E-02 | .1282E-01 |
| .167 | 8.176 | .2435E+05 | 2.630 | 145.5 | 132.0 | 145.4980 | 132.0343 | .8673E-03 | .1274E-02 |
| .018 | 14.395 | .1585E+05 | 2.575 | 146.5 | 131.0 | 146.2908 | 130.7907 | .7052E-03 | .6919E-03 |
| .097 | 20.726 | .1928E+05 | 2.515 | 147.0 | 129.5 | 146.9732 | 129.4760 | .4077E-03 | .5124E-03 |
| .206 | 26.963 | .2530E+05 | 2.607 | 147.5 | 128.0 | 147.4921 | 128.0078 | .5677E-03 | .4214E-03 |
| .091 | 33.244 | .1157E+05 | 2.441 | 148.0 | 126.5 | 147.8806 | 126.5658 | .5041E-02 | .2897E-02 |
| .161 | 39.532 | .1175E+05 | 2.575 | 148.0 | 125.0 | 148.0992 | 125.0326 | .3053E-03 | .1290E-02 |
| .133 | 45.820 | .2405E+05 | 2.508 | 148.0 | 123.5 | 148.1522 | 123.5572 | .5050E-03 | .2824E-03 |
| .156 | 52.117 | .2362E+05 | 2.569 | 148.0 | 122.0 | 148.0557 | 122.0426 | .3691E-03 | .1189E-02 |
| .116 | 58.356 | .1707E+05 | 2.499 | 148.0 | 120.5 | 147.8373 | 120.5866 | .6914E-02 | .6108E-02 |
| .077 | 64.615 | .1990E+05 | 2.563 | 147.5 | 119.0 | 147.4388 | 119.0748 | .8168E-03 | .9713E-03 |
| .139 | 70.891 | .2132E+05 | 2.563 | 147.0 | 117.5 | 146.8519 | 117.6855 | .6397E-03 | .5297E-03 |
| .215 | 1.826 | .2550E+05 | 2.620 | 146.0 | 116.0 * | 146.0896 | 116.2216 | .4901E-02 | .5958E-02 |
| .091 | 8.193 | .1824E+05 | 2.591 | 145.5 | 115.0 | 145.2725 | 114.9482 | .7311E-03 | .8863E-03 |
| .144 | 14.381 | .2011E+05 | 2.612 | 144.5 | 114.0 | 144.3121 | 113.8255 | .4159E-03 | .7671E-03 |
| .142 | 20.719 | .1072E+05 | 2.573 | 143.0 | 113.0 | 143.2177 | 112.7006 | .3394E-03 | .2908E-03 |
| .189 | 26.976 | .3026E+05 | 2.633 | 142.0 | 112.0 | 142.0484 | 111.7905 | .7150E-02 | .7153E-03 |
| .088 | 33.256 | .1915E+05 | 2.580 | 140.5 | 111.0 * | 140.7500 | 110.9503 | .3334E-03 | .1874E-03 |
| .088 | 39.554 | .9519E+04 | 2.508 | 139.5 | 110.5 | 139.4130 | 110.3155 | .4341E-03 | .5320E-03 |

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T801-04

| | | | | | | | | | |
|------|--------|-----------|-------|-------|-------|----------|----------|-----------|-----------|
| .156 | 45.832 | .2419E+05 | 2.652 | 132.0 | 109.0 | 131.8730 | 109.8221 | .2419E+05 | .5446E-03 |
| .139 | 52.117 | .1707E+05 | 2.529 | 136.5 | 109.5 | 136.5243 | 109.4164 | .4489E-03 | .5338E-03 |
| .161 | 58.384 | .3414E+04 | 2.673 | 135.0 | 109.0 | 135.0808 | 109.1800 | .9369E-03 | .7339E-03 |
| .147 | 64.644 | .1021E+05 | 2.652 | 133.5 | 109.0 | 133.5167 | 109.0898 | .4854E-03 | .9904E-03 |
| .170 | 70.891 | .2419E+04 | 2.699 | 132.0 | 109.0 | 131.8730 | 109.1634 | .2419E-01 | .6466E-03 |
| .156 | 1.834 | .1771E+05 | 2.512 | 130.5 | 109.5 | 130.3677 | 109.4613 | .8730E-03 | .5915E-03 |
| .173 | 8.173 | .2350E+05 | 2.445 | 129.0 | 110.0 | 128.9268 | 109.9312 | .9233E-03 | .2179E-03 |
| .091 | 14.403 | .8272E+04 | 2.437 | 127.5 | 110.5 | 127.5546 | 110.4320 | .4930E-03 | .5188E-03 |
| .091 | 20.771 | .2043E+05 | 2.620 | 126.0 | 111.0 | 126.1545 | 111.1118 | .3003E-03 | .8132E-03 |
| .212 | 26.973 | .2850E+05 | 2.671 | 125.0 | 112.0 | 124.9425 | 111.9761 | .7337E-03 | .1275E-02 |
| .116 | 33.265 | .1516E+05 | 2.612 | 124.0 | 113.0 | 123.7994 | 112.9205 | .9044E-03 | .6799E-03 |
| .153 | 39.565 | .1997E+05 | 2.604 | 122.5 | 114.0 | 122.7124 | 114.0180 | .6864E-03 | .6158E-03 |
| .119 | 45.843 | .2045E+05 | 2.633 | 121.5 | 115.0 | 121.7496 | 115.1753 | .3506E-02 | .2211E-02 |
| .153 | 52.106 | .1457E+05 | 2.541 | 121.0 | 116.5 | 120.9688 | 116.4789 | .4260E-03 | .6254E-03 |
| .153 | 58.367 | .2164E+05 | 2.636 | 120.5 | 118.0 | 120.2692 | 117.8577 | .9049E-03 | .6204E-02 |
| .136 | 64.658 | .2011E+05 | 2.611 | 119.5 | 119.0 | 119.7342 | 119.2168 | .3918E-03 | .7220E-03 |
| .212 | 70.873 | .1389E+05 | 2.628 | 119.5 | 120.5 | 119.3199 | 120.7158 | .2872E-03 | .9253E-03 |
| .122 | 1.823 | .1360E+05 | 2.544 | 119.0 | 122.5 | 119.0918 | 122.3496 | .2693E-02 | .3156E-01 |
| .234 | 8.164 | .3079E+05 | 2.628 | 119.0 | 124.0 | 119.0897 | 123.8694 | .6551E-03 | .1185E-02 |
| .150 | 14.365 | .2056E+05 | 2.609 | 119.0 | 125.5 | 119.1600 | 125.3345 | .2092E-01 | .2091E-01 |
| .097 | 20.727 | .1530E+05 | 2.576 | 119.5 | 127.0 | 119.3983 | 126.8388 | .5921E-03 | .6339E-03 |
| .181 | 26.996 | .1415E+05 | 2.595 | 120.0 | 128.5 | 119.8087 | 128.3386 | .2716E-03 | .7861E-03 |
| .184 | 33.290 | .2303E+05 | 2.653 | 120.5 | 130.0 | 120.3639 | 129.6979 | .5598E-02 | .2423E-01 |
| .119 | 39.545 | .2090E+05 | 2.559 | 121.0 | 131.0 | 121.0634 | 131.0322 | .7826E-03 | .6424E-03 |
| .150 | 45.832 | .1399E+05 | 2.577 | 122.0 | 132.5 | 121.9133 | 132.3670 | .1014E-02 | .3311E-03 |

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| | 1 | 2 | delta ri | 4 | 5 | 6 |
|---|---------|---------|----------|---------|---------|---------|
| 0 | .01950 | -.00072 | -.01688 | .02490 | -.02139 | .00343 |
| 1 | .01342 | .03960 | .02129 | .04120 | .03125 | -.00765 |
| 2 | -.00752 | -.00424 | -.02531 | .00513 | -.02199 | .02192 |
| 3 | -.01360 | .01364 | -.01176 | .00611 | .01174 | .01201 |
| 4 | -.01727 | .00340 | .01815 | -.02272 | .02088 | .00933 |
| 5 | -.01336 | .02700 | .01615 | .03081 | .00442 | -.03405 |
| 6 | -.00911 | .00612 | .02147 | .05031 | .01280 | -.04745 |
| 7 | -.00503 | .04149 | -.00793 | -.01121 | -.00783 | .02278 |
| 8 | -.02316 | -.01524 | .00514 | .02404 | .00948 | -.04732 |
| 9 | -.02372 | -.00872 | .00006 | -.01629 | -.02219 | .00643 |

x0= 133.6029 y0= 123.6729 r0= 14.56180286 std.dev.= .02131811

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 1 | 4 | 4 | 15 | 16 | 20 | 0 |

ORIGINAL PAGE IS
OF POOR QUALITY

delta r1

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---------|---------|---------|---------|
| 0 | .01918 | -.00107 | -.01725 | .02451 | | .00302 |
| 1 | .01309 | | .02105 | .04103 | | .00767 |
| 2 | -.00746 | | -.02504 | .00551 | | -.02131 |
| 3 | -.01286 | .01449 | -.01079 | .00719 | -.01054 | -.01971 |
| 4 | -.01587 | .00489 | .01973 | -.02106 | -.01915 | .01046 |
| 5 | -.01153 | .02886 | .01803 | .03270 | .00630 | .03213 |
| 6 | -.00727 | .00792 | .02322 | | .01441 | -.04489 |
| 7 | -.00359 | .04283 | -.00669 | -.01008 | -.00602 | .02358 |
| 8 | -.02238 | -.01458 | .00568 | .02447 | | -.04712 |
| 9 | | -.00871 | -.00002 | | -.02241 | .00629 |

x0= 133.6023 y0= 123.6738 r0= 14.56105137 std.dev.= .01992372

HISTOGRAM DEVIATION >= e

| | | | | | | | |
|----|-----|-----|-----|-----|-----|------|------------|
| e= | .05 | .04 | .03 | .02 | .01 | 0.00 | bad points |
| | 0 | 4 | 2 | 11 | 17 | 17 | 9 |

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(NED) NOISE EQUIVALENT DISPLACEMENT DATA

- NDRO = 32
- NDRO = 58
- NDRO = 98
- NDRO = 156
- NDRO = 192
- NDRO = 234
- NDRO = 276
- NDRO = 312
- NDRO = 346
- NDRO = 390
- NDRO = 510

NDRO = #Samples in 2. reads

Track data file IDATA00

NNRN: Coarse 1.0 Fine 1.0 Track 16.0
 Integration delay: .1160E+00 .4564E+00 .2640E-03
 Thresholds: .1838E+06 .9190E+05 .7352E+06

Constants: .30000 .30000 .30000 .30000
 Displacements: 0.00000 0.00000 0.00000 0.00000

| Temp | Angle | Dark Current | Star Mag. | Reference | | Position | | Standard Deviation | |
|------|-------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-------|
| | | | | X | Y | X | Y | X | Y |
| .327 | 8.203 | .3492E+05 | 6.003 | 91.0 | 136.0 | 90.6659 | 135.9899 | .0695 | .0451 |
| .341 | 8.205 | .3360E+05 | 6.068 | 91.0 | 136.0 | 90.7493 | 136.0862 | | |
| .271 | 8.196 | .3582E+05 | 5.966 | 91.0 | 136.0 | 90.7043 | 136.0278 | | |
| .299 | 8.185 | .3546E+05 | 6.115 | 91.0 | 136.0 | 90.5925 | 136.0721 | | |
| .369 | 8.185 | .3360E+05 | 5.941 | 91.0 | 136.0 | 90.6378 | 135.9992 | | |
| .327 | 8.203 | .3492E+05 | 6.118 | 91.0 | 136.0 | 90.5909 | 136.0108 | | |
| .257 | 8.179 | .3372E+05 | 5.944 | 91.0 | 136.0 | 90.6986 | 136.0359 | | |
| .327 | 8.196 | .3474E+05 | 5.891 | 91.0 | 136.0 | 90.7018 | 136.0901 | | |
| .257 | 8.203 | .3564E+05 | 6.099 | 91.0 | 136.0 | 90.7364 | 136.0537 | | |
| .299 | 8.196 | .3444E+05 | 6.050 | 91.0 | 136.0 | 90.7500 | 136.0893 | | |
| .257 | 8.179 | .3372E+05 | 5.944 | 91.0 | 136.0 | 90.7166 | 135.9339 | | |
| .327 | 8.196 | .3480E+05 | 5.947 | 91.0 | 136.0 | 90.7060 | 136.1032 | | |
| .271 | 8.205 | .3528E+05 | 6.035 | 91.0 | 136.0 | 90.7608 | 136.0318 | | |
| .341 | 8.203 | .3306E+05 | 5.922 | 91.0 | 136.0 | 90.7611 | 136.0925 | | |
| .299 | 8.203 | .3576E+05 | 5.963 | 91.0 | 136.0 | 90.8271 | 136.0733 | | |
| .327 | 8.196 | .3360E+05 | 5.863 | 91.0 | 136.0 | 90.7693 | 136.0715 | | |
| .257 | 8.214 | .3618E+05 | 6.000 | 91.0 | 136.0 | 90.8294 | 136.0749 | | |
| .257 | 8.196 | .3360E+05 | 5.949 | 91.0 | 136.0 | 90.7730 | 136.0082 | | |
| .327 | 8.179 | .3394E+05 | 6.053 | 91.0 | 136.0 | 90.6199 | 136.1190 | | |
| .271 | 8.187 | .3414E+05 | 5.938 | 91.0 | 136.0 | 90.7140 | 136.0408 | | |
| .257 | 8.196 | .3642E+05 | 6.032 | 91.0 | 136.0 | 90.7080 | 136.1085 | | |
| .327 | 8.203 | .3510E+05 | 6.077 | 91.0 | 136.0 | 90.7394 | 136.0499 | | |
| .327 | 8.187 | .3420E+05 | 5.928 | 91.0 | 136.0 | 90.7277 | 136.0162 | | |
| .355 | 8.205 | .3462E+05 | 6.023 | 91.0 | 136.0 | 90.7826 | 136.0484 | | |
| .355 | 8.205 | .3612E+05 | 6.102 | 91.0 | 136.0 | 90.5625 | 136.2436 | | |
| .285 | 8.203 | .3702E+05 | 6.111 | 91.0 | 136.0 | 90.5519 | 135.9485 | | |
| .285 | 8.196 | .3456E+05 | 6.026 | 91.0 | 136.0 | 90.5548 | 136.0002 | | |
| .327 | 8.196 | .3534E+05 | 6.111 | 91.0 | 136.0 | 90.7192 | 136.0941 | | |
| .271 | 8.205 | .3636E+05 | 6.184 | 91.0 | 136.0 | 90.6012 | 136.1091 | | |
| .215 | 8.185 | .3534E+05 | 5.958 | 91.0 | 136.0 | 90.7923 | 136.0251 | | |
| .327 | 8.205 | .3564E+05 | 6.006 | 91.0 | 136.0 | 90.6760 | 136.0696 | | |
| .285 | 8.205 | .3534E+05 | 6.118 | 91.0 | 136.0 | 90.5849 | 136.0385 | | |
| .257 | 8.205 | .3426E+05 | 6.017 | 91.0 | 136.0 | 90.6550 | 136.0220 | | |
| .355 | 8.179 | .3540E+05 | 5.994 | 91.0 | 136.0 | 90.6398 | 135.9009 | | |
| .327 | 8.200 | .3576E+05 | 6.105 | 91.0 | 136.0 | 90.7031 | 136.0197 | | |
| .299 | 8.200 | .3408E+05 | 5.899 | 91.0 | 136.0 | 90.7733 | 136.0390 | | |
| .271 | 8.179 | .3594E+05 | 6.222 | 91.0 | 136.0 | 90.7595 | 136.0390 | | |
| .327 | 8.196 | .3504E+05 | 5.888 | 91.0 | 136.0 | 90.6605 | 136.0199 | | |
| .299 | 8.196 | .3582E+05 | 5.988 | 91.0 | 136.0 | 90.7724 | 136.0164 | | |
| .327 | 8.205 | .3702E+05 | 6.083 | 91.0 | 136.0 | 90.5113 | 135.9304 | | |
| .257 | 8.179 | .3462E+05 | 6.190 | 91.0 | 136.0 | 90.5126 | 136.0452 | | |

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T801-04

| | | | | | | | |
|------|-------|-----------|-------|------|-------|---------|----------|
| .327 | 8.203 | .3528E+05 | 5.941 | 91.0 | 136.0 | 90.7376 | 136.0655 |
| .257 | 8.203 | .3486E+05 | 6.023 | 91.0 | 136.0 | 90.7324 | 136.0655 |
| .327 | 8.196 | .3432E+05 | 6.041 | 91.0 | 136.0 | 90.7342 | 136.0654 |
| .327 | 8.196 | .3282E+05 | 5.825 | 91.0 | 136.0 | 90.7053 | 136.0634 |
| .229 | 8.205 | .3510E+05 | 5.896 | 91.0 | 136.0 | 90.7528 | 136.0581 |
| .327 | 8.196 | .3498E+05 | 6.026 | 91.0 | 136.0 | 90.7040 | 136.0323 |
| .355 | 8.196 | .3546E+05 | 6.071 | 91.0 | 136.0 | 90.7834 | 136.1785 |
| .341 | 8.205 | .3480E+05 | 6.023 | 91.0 | 136.0 | 90.6698 | 136.0674 |
| .271 | 8.187 | .3510E+05 | 5.963 | 91.0 | 136.0 | 90.7812 | 136.0081 |
| .271 | 8.203 | .3570E+05 | 5.875 | 91.0 | 136.0 | 90.6745 | 135.9936 |
| .271 | 8.196 | .3600E+05 | 6.059 | 91.0 | 136.0 | 90.7603 | 136.0163 |

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TM61-04

Track data file TDATA00

| | Coarse | Fine | Track |
|--------------------|-----------|-----------|-----------|
| NDR0: | 1.0 | 1.0 | 29.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .2640E-03 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | .30000 | .30000 | .30000 | .30000 |
|----------------|---------|---------|---------|---------|
| Constants: | .30000 | .30000 | .30000 | .30000 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Temp | Angle | Dark Current | Star Mag. | Reference | | Position | | Standard Deviation | |
|------|-------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-------|
| | | | | X | Y | X | Y | X | Y |
| .243 | 8.205 | .1665E+05 | 6.000 | 91.0 | 136.0 | 90.8719 | 136.0262 | .0215 | .0208 |
| .327 | 8.187 | .1698E+05 | 5.998 | 91.0 | 136.0 | 90.8111 | 136.0181 | | |
| .285 | 8.205 | .1601E+05 | 5.898 | 91.0 | 136.0 | 90.8559 | 136.0154 | | |
| .229 | 8.187 | .1631E+05 | 5.960 | 91.0 | 136.0 | 90.8501 | 136.0322 | | |
| .397 | 8.200 | .1570E+05 | 5.965 | 91.0 | 136.0 | 90.8681 | 136.0531 | | |
| .299 | 8.196 | .1643E+05 | 5.953 | 91.0 | 136.0 | 90.8614 | 136.0049 | | |
| .271 | 8.200 | .1653E+05 | 5.990 | 91.0 | 136.0 | 90.8884 | 136.0136 | | |
| .215 | 8.187 | .1640E+05 | 6.002 | 91.0 | 136.0 | 90.8719 | 136.0211 | | |
| .201 | 8.196 | .1576E+05 | 5.955 | 91.0 | 136.0 | 90.8702 | 136.0104 | | |
| .355 | 8.179 | .1654E+05 | 5.977 | 91.0 | 136.0 | 90.8589 | 136.0525 | | |
| .327 | 8.196 | .1568E+05 | 5.998 | 91.0 | 136.0 | 90.8798 | 136.0087 | | |
| .271 | 8.187 | .1612E+05 | 5.985 | 91.0 | 136.0 | 90.8521 | 136.0336 | | |
| .299 | 8.200 | .1574E+05 | 5.949 | 91.0 | 136.0 | 90.8512 | 136.0114 | | |
| .299 | 8.205 | .1623E+05 | 5.961 | 91.0 | 136.0 | 90.8698 | 135.9717 | | |
| .383 | 8.196 | .1631E+05 | 6.024 | 91.0 | 136.0 | 90.8456 | 136.0125 | | |
| .271 | 8.179 | .1660E+05 | 5.986 | 91.0 | 136.0 | 90.8467 | 136.0078 | | |
| .327 | 8.205 | .1702E+05 | 6.041 | 91.0 | 136.0 | 90.8802 | 136.0364 | | |
| .369 | 8.179 | .1607E+05 | 5.934 | 91.0 | 136.0 | 90.8411 | 135.9673 | | |
| .173 | 8.187 | .1616E+05 | 5.992 | 91.0 | 136.0 | 90.8055 | 136.0158 | | |
| .397 | 8.222 | .1598E+05 | 5.981 | 91.0 | 136.0 | 90.8617 | 136.0310 | | |
| .383 | 8.185 | .1563E+05 | 6.003 | 91.0 | 136.0 | 90.8855 | 136.0249 | | |
| .285 | 8.203 | .1667E+05 | 5.990 | 91.0 | 136.0 | 90.8850 | 136.0263 | | |
| .327 | 8.185 | .1563E+05 | 5.933 | 91.0 | 136.0 | 90.8531 | 136.0353 | | |
| .355 | 8.185 | .1557E+05 | 5.998 | 91.0 | 136.0 | 90.8642 | 136.0407 | | |
| .369 | 8.187 | .1592E+05 | 5.991 | 91.0 | 136.0 | 90.8928 | 136.0484 | | |
| .327 | 8.196 | .1590E+05 | 5.982 | 91.0 | 136.0 | 90.8912 | 136.0000 | | |
| .299 | 8.196 | .1618E+05 | 5.989 | 91.0 | 136.0 | 90.8900 | 136.0076 | | |
| .243 | 8.179 | .1609E+05 | 5.953 | 91.0 | 136.0 | 90.8908 | 136.0356 | | |
| .327 | 8.196 | .1636E+05 | 5.972 | 91.0 | 136.0 | 90.8953 | 136.0378 | | |
| .327 | 8.179 | .1583E+05 | 5.964 | 91.0 | 136.0 | 90.8844 | 136.0097 | | |
| .327 | 8.187 | .1673E+05 | 5.928 | 91.0 | 136.0 | 90.8463 | 136.0091 | | |
| .271 | 8.189 | .1658E+05 | 5.998 | 91.0 | 136.0 | 90.8715 | 136.0488 | | |
| .327 | 8.196 | .1627E+05 | 5.995 | 91.0 | 136.0 | 90.8585 | 136.0296 | | |
| .257 | 8.196 | .1673E+05 | 6.009 | 91.0 | 136.0 | 90.8541 | 136.0084 | | |
| .285 | 8.205 | .1678E+05 | 6.023 | 91.0 | 136.0 | 90.8048 | 136.0075 | | |
| .327 | 8.200 | .1599E+05 | 5.932 | 91.0 | 136.0 | 90.8621 | 136.0199 | | |
| .341 | 8.196 | .1596E+05 | 5.951 | 91.0 | 136.0 | 90.8387 | 136.0298 | | |
| .327 | 8.183 | .1636E+05 | 6.071 | 91.0 | 136.0 | 90.8522 | 135.9886 | | |
| .299 | 8.196 | .1574E+05 | 5.956 | 91.0 | 136.0 | 90.8550 | 136.0130 | | |
| .299 | 8.187 | .1631E+05 | 6.005 | 91.0 | 136.0 | 90.8540 | 136.0076 | | |
| .355 | 8.196 | .1583E+05 | 6.003 | 91.0 | 136.0 | 90.8303 | 136.0212 | | |

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| | |
|---------|----------|
| 90.8593 | 135.9942 |
| 90.8875 | 136.0353 |
| 90.9156 | 136.0764 |

~~136.0~~
136.0
136.0

91.0
91.0

5. 956
5. 026

1594E+05
1719E+05

8. 173
8. 169

24 411 285

Track data file TDATA00

NDRO: Coarse 1.0 Fine 1.0 Track 48.0
 Integration delay: .1160E+00 .4564E+00 .2640E-03
 Thresholds: .1838E+06 .9190E+05 .7352E+06

Constants: .30000 .30000 .30000 .30000
 Displacements: 0.00000 0.00000 0.00000 0.00000

| Temp | Angle | Dark Current | Star Mag. | Reference | | Position | | Standard Deviation | |
|------|-------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-------|
| | | | | X | Y | X | Y | X | Y |
| .271 | 8.185 | .1020E+05 | 5.937 | 91.0 | 136.0 | 90.9183 | 136.0518 | | |
| .327 | 8.196 | .9868E+04 | 5.966 | 91.0 | 136.0 | 90.9143 | 136.0539 | .0096 | .0083 |
| .355 | 8.196 | .1024E+05 | 5.947 | 91.0 | 136.0 | 90.8958 | 136.0342 | | |
| .187 | 8.196 | .1002E+05 | 5.946 | 91.0 | 136.0 | 90.8927 | 136.0501 | | |
| .327 | 8.205 | .1018E+05 | 5.980 | 91.0 | 136.0 | 90.8939 | 136.0368 | | |
| .327 | 8.203 | .9988E+04 | 5.964 | 91.0 | 136.0 | 90.9084 | 136.0523 | | |
| .327 | 8.203 | .1000E+05 | 5.944 | 91.0 | 136.0 | 90.8916 | 136.0428 | | |
| .327 | 8.196 | .9787E+04 | 5.949 | 91.0 | 136.0 | 90.9095 | 136.0432 | | |
| .299 | 8.185 | .1028E+05 | 5.986 | 91.0 | 136.0 | 90.9037 | 136.0356 | | |
| .327 | 8.185 | .1022E+05 | 5.954 | 91.0 | 136.0 | 90.9195 | 136.0387 | | |
| .355 | 8.196 | .1016E+05 | 5.948 | 91.0 | 136.0 | 90.9132 | 136.0385 | | |
| .243 | 8.196 | .1015E+05 | 5.960 | 91.0 | 136.0 | 90.8975 | 136.0384 | | |
| .271 | 8.196 | .1019E+05 | 5.944 | 91.0 | 136.0 | 90.9100 | 136.0562 | | |
| .355 | 8.179 | .9914E+04 | 5.971 | 91.0 | 136.0 | 90.9118 | 136.0395 | | |
| .285 | 8.179 | .1005E+05 | 5.939 | 91.0 | 136.0 | 90.9184 | 136.0654 | | |
| .243 | 8.196 | .1029E+05 | 5.943 | 91.0 | 136.0 | 90.9174 | 136.0464 | | |
| .229 | 8.196 | .9975E+04 | 5.969 | 91.0 | 136.0 | 90.9164 | 136.0397 | | |
| .397 | 8.179 | .1013E+05 | 5.978 | 91.0 | 136.0 | 90.9107 | 136.0558 | | |
| .299 | 8.196 | .1010E+05 | 5.963 | 91.0 | 136.0 | 90.9045 | 136.0473 | | |
| .229 | 8.196 | .1055E+05 | 6.005 | 91.0 | 136.0 | 90.9079 | 136.0517 | | |
| .201 | 8.179 | .9787E+04 | 5.931 | 91.0 | 136.0 | 90.9065 | 136.0472 | | |
| .285 | 8.205 | .1031E+05 | 5.958 | 91.0 | 136.0 | 90.8990 | 136.0414 | | |
| .257 | 8.196 | .1036E+05 | 5.980 | 91.0 | 136.0 | 90.9139 | 136.0374 | | |
| .271 | 8.196 | .1052E+05 | 5.946 | 91.0 | 136.0 | 90.9040 | 136.0490 | | |
| .327 | 8.205 | .1016E+05 | 5.971 | 91.0 | 136.0 | 90.9157 | 136.0322 | | |
| .285 | 8.185 | .1016E+05 | 5.962 | 91.0 | 136.0 | 90.9047 | 136.0414 | | |
| .257 | 8.179 | .1039E+05 | 5.976 | 91.0 | 136.0 | 90.9047 | 136.0443 | | |
| .313 | 8.205 | .1020E+05 | 5.945 | 91.0 | 136.0 | 90.9151 | 136.0533 | | |
| .341 | 8.205 | .9921E+04 | 5.953 | 91.0 | 136.0 | 90.8941 | 136.0512 | | |
| .243 | 8.196 | .1054E+05 | 5.969 | 91.0 | 136.0 | 90.8967 | 136.0457 | | |
| .327 | 8.196 | .9881E+04 | 5.971 | 91.0 | 136.0 | 90.9005 | 136.0463 | | |
| .257 | 8.203 | .1001E+05 | 5.961 | 91.0 | 136.0 | 90.9267 | 136.0499 | | |
| .299 | 8.214 | .1037E+05 | 5.984 | 91.0 | 136.0 | 90.8866 | 136.0244 | | |
| .327 | 8.196 | .9975E+04 | 5.958 | 91.0 | 136.0 | 90.9071 | 136.0404 | | |
| .383 | 8.214 | .9834E+04 | 5.937 | 91.0 | 136.0 | 90.9000 | 136.0375 | | |
| .383 | 8.179 | .1024E+05 | 5.936 | 91.0 | 136.0 | 90.9095 | 136.0531 | | |
| .369 | 8.196 | .1030E+05 | 5.981 | 91.0 | 136.0 | 90.8850 | 136.0363 | | |
| .271 | 8.196 | .1014E+05 | 5.987 | 91.0 | 136.0 | 90.9014 | 136.0508 | | |
| .271 | 8.196 | .9747E+04 | 5.944 | 91.0 | 136.0 | 90.9085 | 136.0440 | | |
| .271 | 8.169 | .1040E+05 | 5.971 | 91.0 | 136.0 | 90.9051 | 136.0414 | | |
| .327 | 8.179 | .1029E+05 | 5.971 | 91.0 | 136.0 | 90.9041 | 136.0396 | | |

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| | | | | | | | |
|------|-------|-----------|-------|------|-------|---------|----------|
| .24 | 8.196 | .1020E+05 | 5.960 | 91.0 | 136.0 | 90.9039 | 136.0467 |
| .187 | 8.196 | .1020E+05 | 5.960 | 91.0 | 136.0 | 90.8959 | 136.0322 |
| .327 | 8.203 | .1040E+05 | 5.962 | 91.0 | 136.0 | 90.9107 | 136.0352 |
| .257 | 8.196 | .1018E+05 | 5.945 | 91.0 | 136.0 | 90.8980 | 136.0346 |
| .327 | 8.196 | .1024E+05 | 5.970 | 91.0 | 136.0 | 90.8932 | 136.0432 |
| .257 | 8.196 | .1007E+05 | 5.983 | 91.0 | 136.0 | 90.9043 | 136.0319 |
| .285 | 8.179 | .1046E+05 | 5.981 | 91.0 | 136.0 | 90.9076 | 136.0432 |
| .327 | 8.187 | .1053E+05 | 5.936 | 91.0 | 136.0 | 90.9251 | 136.0627 |
| .285 | 8.196 | .1008E+05 | 5.947 | 91.0 | 136.0 | 90.9027 | 136.0391 |
| .257 | 8.196 | .1036E+05 | 5.986 | 91.0 | 136.0 | 90.9070 | 136.0527 |
| .327 | 8.179 | .1017E+05 | 5.964 | 91.0 | 136.0 | 90.8833 | 136.0472 |
| .327 | 8.196 | .1032E+05 | 5.946 | 91.0 | 136.0 | 90.9060 | 136.0551 |
| .293 | 8.200 | .1055E+05 | 5.984 | 91.0 | 136.0 | | |

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Track data file TDATA00

| | Coarse | Fine | Track |
|--------------------|-----------|-----------|-----------|
| NDR01 | 1.0 | 1.0 | 78.0 |
| Integration delay: | .1160E+00 | .4554E+00 | .2640E-03 |
| Thresholds: | .1838E+04 | .9190E+05 | .7352E+06 |

| Constants: | .30000 | .30000 | .30000 | .30000 |
|----------------|---------|---------|---------|---------|
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Temp | Angle | Dark | Star | Reference | | Position | | Standard Deviation | |
|------|-------|-----------|-------|-----------|-------|----------|----------|--------------------|-------|
| | | Current | Mag. | X | Y | X | Y | X | Y |
| .215 | 8.187 | .8155E+04 | 5.964 | 91.0 | 136.0 | 90.9137 | 136.0495 | .0062 | .0045 |
| .243 | 8.179 | .7934E+04 | 5.957 | 91.0 | 136.0 | 90.9126 | 136.0351 | | |
| .285 | 8.196 | .7845E+04 | 5.934 | 91.0 | 136.0 | 90.9263 | 136.0453 | | |
| .369 | 8.196 | .8135E+04 | 5.974 | 91.0 | 136.0 | 90.9162 | 136.0414 | | |
| .299 | 8.196 | .7870E+04 | 5.949 | 91.0 | 136.0 | 90.9169 | 136.0408 | | |
| .327 | 8.196 | .7781E+04 | 5.949 | 91.0 | 136.0 | 90.9089 | 136.0364 | | |
| .327 | 8.196 | .7947E+04 | 5.969 | 91.0 | 136.0 | 90.9222 | 136.0383 | | |
| .327 | 8.205 | .8142E+04 | 5.955 | 91.0 | 136.0 | 90.9250 | 136.0400 | | |
| .187 | 8.179 | .7898E+04 | 5.950 | 91.0 | 136.0 | 90.9110 | 136.0392 | | |
| .327 | 8.185 | .8035E+04 | 5.964 | 91.0 | 136.0 | 90.9172 | 136.0423 | | |
| .257 | 8.205 | .7926E+04 | 5.942 | 91.0 | 136.0 | 90.9159 | 136.0356 | | |
| .285 | 8.196 | .7985E+04 | 5.960 | 91.0 | 136.0 | 90.9103 | 136.0347 | | |
| .299 | 8.196 | .8178E+04 | 5.969 | 91.0 | 136.0 | 90.9166 | 136.0316 | | |
| .341 | 8.179 | .8084E+04 | 5.964 | 91.0 | 136.0 | 90.9211 | 136.0446 | | |
| .341 | 8.185 | .7974E+04 | 5.969 | 91.0 | 136.0 | 90.9177 | 136.0401 | | |
| .341 | 8.196 | .7974E+04 | 5.959 | 91.0 | 136.0 | 90.9220 | 136.0391 | | |
| .271 | 8.203 | .8122E+04 | 5.978 | 91.0 | 136.0 | 90.9172 | 136.0290 | | |
| .243 | 8.203 | .8043E+04 | 5.959 | 91.0 | 136.0 | 90.9190 | 136.0351 | | |
| .355 | 8.205 | .8117E+04 | 5.977 | 91.0 | 136.0 | 90.9058 | 136.0434 | | |
| .341 | 8.179 | .7972E+04 | 5.941 | 91.0 | 136.0 | 90.9290 | 136.0328 | | |
| .327 | 8.185 | .8051E+04 | 5.961 | 91.0 | 136.0 | 90.9169 | 136.0382 | | |
| .327 | 8.196 | .7878E+04 | 5.955 | 91.0 | 136.0 | 90.9209 | 136.0358 | | |
| .201 | 8.179 | .7855E+04 | 5.949 | 91.0 | 136.0 | 90.9205 | 136.0428 | | |
| .187 | 8.205 | .7911E+04 | 5.950 | 91.0 | 136.0 | 90.9254 | 136.0357 | | |
| .271 | 8.187 | .7888E+04 | 5.964 | 91.0 | 136.0 | 90.9274 | 136.0284 | | |
| .257 | 8.196 | .7886E+04 | 5.952 | 91.0 | 136.0 | 90.9274 | 136.0312 | | |
| .187 | 8.196 | .7962E+04 | 5.959 | 91.0 | 136.0 | 90.9227 | 136.0396 | | |
| .285 | 8.179 | .7776E+04 | 5.932 | 91.0 | 136.0 | 90.9350 | 136.0318 | | |
| .257 | 8.203 | .8028E+04 | 5.944 | 91.0 | 136.0 | 90.9193 | 136.0364 | | |
| .229 | 8.196 | .8020E+04 | 5.938 | 91.0 | 136.0 | 90.9127 | 136.0264 | | |
| .327 | 8.196 | .8053E+04 | 5.973 | 91.0 | 136.0 | 90.9101 | 136.0377 | | |
| .229 | 8.196 | .8119E+04 | 5.968 | 91.0 | 136.0 | 90.9165 | 136.0390 | | |
| .257 | 8.196 | .7941E+04 | 5.935 | 91.0 | 136.0 | 90.9153 | 136.0299 | | |
| .299 | 8.161 | .7842E+04 | 5.949 | 91.0 | 136.0 | 90.9131 | 136.0341 | | |
| .243 | 8.203 | .8063E+04 | 5.972 | 91.0 | 136.0 | 90.9235 | 136.0400 | | |

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Track data file TRAT000

| | Coarse | Fine | Track |
|--------------------|-----------|-----------|-----------|
| NORM: | 1.0 | 1.0 | 96.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .2640E-03 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | .30000 | .30000 | .30000 | .30000 |
|----------------|---------|---------|---------|---------|
| Constants: | | | | |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Temp | Angle | Dark Current | Star Mag. | Reference | | Position | | Standard Deviation | |
|------|-------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-------|
| | | | | X | Y | X | Y | X | Y |
| .187 | 8.196 | .7725E+04 | 5.957 | 91.0 | 136.0 | 90.9223 | 136.0363 | .0043 | .0040 |
| .201 | 8.203 | .7716E+04 | 5.960 | 91.0 | 136.0 | 90.9254 | 136.0309 | | |
| .201 | 8.196 | .7948E+04 | 5.973 | 91.0 | 136.0 | 90.9297 | 136.0433 | | |
| .144 | 8.205 | .7822E+04 | 5.962 | 91.0 | 136.0 | 90.9276 | 136.0364 | | |
| .285 | 8.179 | .7854E+04 | 5.945 | 91.0 | 136.0 | 90.9197 | 136.0402 | | |
| .327 | 8.196 | .7864E+04 | 5.959 | 91.0 | 136.0 | 90.9209 | 136.0410 | | |
| .173 | 8.196 | .7693E+04 | 5.947 | 91.0 | 136.0 | 90.9213 | 136.0325 | | |
| .327 | 8.196 | .7575E+04 | 5.945 | 91.0 | 136.0 | 90.9231 | 136.0372 | | |
| .271 | 8.205 | .7745E+04 | 5.936 | 91.0 | 136.0 | 90.9186 | 136.0354 | | |
| .215 | 8.220 | .7735E+04 | 5.955 | 91.0 | 136.0 | 90.9173 | 136.0334 | | |
| .257 | 8.205 | .7793E+04 | 5.947 | 91.0 | 136.0 | 90.9184 | 136.0403 | | |
| .187 | 8.196 | .7887E+04 | 5.959 | 91.0 | 136.0 | 90.9182 | 136.0437 | | |
| .383 | 8.196 | .7871E+04 | 5.954 | 91.0 | 136.0 | 90.9239 | 136.0393 | | |
| .271 | 8.196 | .7783E+04 | 5.962 | 91.0 | 136.0 | 90.9207 | 136.0305 | | |
| .327 | 8.196 | .7768E+04 | 5.960 | 91.0 | 136.0 | 90.9210 | 136.0319 | | |
| .257 | 8.179 | .7797E+04 | 5.942 | 91.0 | 136.0 | 90.9281 | 136.0385 | | |
| .229 | 8.196 | .7812E+04 | 5.946 | 91.0 | 136.0 | 90.9183 | 136.0365 | | |
| .201 | 8.203 | .7617E+04 | 5.942 | 91.0 | 136.0 | 90.9255 | 136.0393 | | |
| .327 | 8.196 | .7847E+04 | 5.957 | 91.0 | 136.0 | 90.9270 | 136.0311 | | |
| .271 | 8.179 | .7829E+04 | 5.976 | 91.0 | 136.0 | 90.9203 | 136.0421 | | |
| .271 | 8.196 | .7829E+04 | 5.951 | 91.0 | 136.0 | 90.9207 | 136.0389 | | |
| .355 | 8.196 | .7871E+04 | 5.963 | 91.0 | 136.0 | 90.9215 | 136.0369 | | |
| .327 | 8.179 | .7882E+04 | 5.977 | 91.0 | 136.0 | 90.9168 | 136.0391 | | |
| .285 | 8.196 | .7884E+04 | 5.961 | 91.0 | 136.0 | 90.9185 | 136.0429 | | |
| .341 | 8.196 | .7755E+04 | 5.951 | 91.0 | 136.0 | 90.9246 | 136.0348 | | |
| .341 | 8.196 | .7752E+04 | 5.956 | 91.0 | 136.0 | 90.9235 | 136.0289 | | |
| .257 | 8.203 | .7748E+04 | 5.940 | 91.0 | 136.0 | 90.9243 | 136.0401 | | |
| .327 | 8.196 | .7903E+04 | 5.975 | 91.0 | 136.0 | 90.9196 | 136.0317 | | |
| .257 | 8.179 | .7693E+04 | 5.952 | 91.0 | 136.0 | 90.9300 | 136.0369 | | |
| .201 | 8.196 | .7552E+04 | 5.948 | 91.0 | 136.0 | 90.9170 | 136.0317 | | |
| .327 | 8.196 | .7963E+04 | 5.957 | 91.0 | 136.0 | 90.9281 | 136.0396 | | |
| .327 | 8.203 | .7921E+04 | 5.960 | 91.0 | 136.0 | 90.9209 | 136.0414 | | |

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Track data file TDA1000

NDRO: Coarse 1.0 Fine 1.0 Track 117.0
 Integration delay: .1160E+00 .4564E+00 .2640E+03
 Threshold: .1838E+06 .9190E+05 .7352E+06

Constant: .30000 .30000 .30000 .30000
 Displacement: 0.00000 0.00000 0.00000 0.00000

| Temp | Angle | Dark Current | Star Mag. | Reference | | Position | | Standard deviation | |
|------|-------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-------|
| | | | | X | Y | X | Y | X | Y |
| .201 | 8.179 | .9424E+04 | 5.964 | 91.0 | 136.0 | 90.9190 | 136.0404 | .0043 | .0057 |
| .299 | 8.205 | .9526E+04 | 5.971 | 91.0 | 136.0 | 90.9055 | 136.0375 | | |
| .201 | 8.205 | .9565E+04 | 5.977 | 91.0 | 136.0 | 90.9127 | 136.0417 | | |
| .257 | 8.205 | .9655E+04 | 5.970 | 91.0 | 136.0 | 90.9111 | 136.0468 | | |
| .257 | 8.196 | .9495E+04 | 5.973 | 91.0 | 136.0 | 90.9087 | 136.0402 | | |
| .257 | 8.203 | .9437E+04 | 5.976 | 91.0 | 136.0 | 90.9182 | 136.0433 | | |
| .215 | 8.196 | .9589E+04 | 5.980 | 91.0 | 136.0 | 90.9056 | 136.0419 | | |
| .243 | 8.205 | .9477E+04 | 5.968 | 91.0 | 136.0 | 90.9158 | 136.0449 | | |
| .243 | 8.205 | .9446E+04 | 5.973 | 91.0 | 136.0 | 90.9118 | 136.0414 | | |
| .187 | 8.203 | .9572E+04 | 5.962 | 91.0 | 136.0 | 90.9138 | 136.0364 | | |
| .243 | 8.196 | .9585E+04 | 5.985 | 91.0 | 136.0 | 90.9071 | 136.0427 | | |
| .243 | 8.196 | .9481E+04 | 5.957 | 91.0 | 136.0 | 90.9141 | 136.0436 | | |
| .173 | 8.179 | .9523E+04 | 5.968 | 91.0 | 136.0 | 90.9141 | 136.0425 | | |
| .285 | 8.203 | .9456E+04 | 5.969 | 91.0 | 136.0 | 90.9070 | 136.0386 | | |
| .327 | 8.196 | .9526E+04 | 5.974 | 91.0 | 136.0 | 90.9123 | 136.0458 | | |
| .327 | 8.196 | .9534E+04 | 5.966 | 91.0 | 136.0 | 90.9133 | 136.0405 | | |
| .327 | 8.196 | .9398E+04 | 5.954 | 91.0 | 136.0 | 90.9115 | 136.0393 | | |
| .201 | 8.196 | .9473E+04 | 5.977 | 91.0 | 136.0 | 90.9144 | 136.0412 | | |
| .201 | 8.196 | .9505E+04 | 5.966 | 91.0 | 136.0 | 90.9169 | 136.0361 | | |
| .285 | 8.187 | .9568E+04 | 5.954 | 91.0 | 136.0 | 90.9171 | 136.0451 | | |
| .215 | 8.205 | .9550E+04 | 5.976 | 91.0 | 136.0 | 90.9181 | 136.0469 | | |
| .229 | 8.203 | .9583E+04 | 5.978 | 91.0 | 136.0 | 90.9145 | 136.0398 | | |
| .243 | 8.214 | .9524E+04 | 5.981 | 91.0 | 136.0 | 90.9199 | 136.0452 | | |
| .341 | 8.196 | .9533E+04 | 5.971 | 91.0 | 136.0 | 90.9086 | 136.0446 | | |
| .187 | 8.196 | .9418E+04 | 5.951 | 91.0 | 136.0 | 90.9083 | 136.0368 | | |
| .257 | 8.179 | .9572E+04 | 5.962 | 91.0 | 136.0 | 90.9189 | 136.0461 | | |
| .327 | 8.196 | .9515E+04 | 5.981 | 91.0 | 136.0 | 90.9115 | 136.0485 | | |
| .327 | 8.203 | .9563E+04 | 5.993 | 91.0 | 136.0 | 90.9097 | 136.0425 | | |
| .116 | 8.196 | .9519E+04 | 5.968 | 91.0 | 136.0 | 90.9114 | 136.0449 | | |
| .257 | 8.196 | .9446E+04 | 5.957 | 91.0 | 136.0 | 90.9145 | 136.0395 | | |
| .257 | 8.196 | .9516E+04 | 5.982 | 91.0 | 136.0 | 90.9146 | 136.0378 | | |
| .257 | 8.196 | .9531E+04 | 5.975 | 91.0 | 136.0 | 90.9143 | 136.0434 | | |
| .355 | 8.196 | .9638E+04 | 5.999 | 91.0 | 136.0 | 90.9142 | 136.0393 | | |
| .257 | 8.196 | .9497E+04 | 5.970 | 91.0 | 136.0 | 90.9125 | 136.0376 | | |
| .285 | 8.196 | .9578E+04 | 5.973 | 91.0 | 136.0 | 90.9120 | 136.0316 | | |
| .299 | 8.214 | .9477E+04 | 5.969 | 91.0 | 136.0 | 90.9151 | 136.0363 | | |
| .257 | 8.205 | .9502E+04 | 5.977 | 91.0 | 136.0 | 90.9154 | 136.0390 | | |
| .327 | 8.196 | .9484E+04 | 5.978 | 91.0 | 136.0 | 90.9146 | 136.0449 | | |

QUALITY
OF
DATA
IS
POOR

Track data file IDATA00

| | Coarse | Fine | Track |
|--------------------|-----------|-----------|-----------|
| NDROI | 1.0 | 1.0 | 138.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .2640E-03 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | .30000 | .30000 | .30000 | .30000 |
|----------------|---------|---------|---------|---------|
| Constants: | .30000 | .30000 | .30000 | .30000 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Temp | Angle | Dark Current | Star Mag. | Reference | | Position | | Standard Deviation | |
|------|-------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-------|
| | | | | X | Y | X | Y | X | Y |
| .215 | 8.196 | .1090E+05 | 5.974 | 91.0 | 136.0 | 90.9076 | 136.0352 | .0028 | .0046 |
| .187 | 8.196 | .1107E+05 | 5.977 | 91.0 | 136.0 | 90.9092 | 136.0398 | | |
| .144 | 8.196 | .1099E+05 | 5.971 | 91.0 | 136.0 | 90.9075 | 136.0397 | | |
| .088 | 8.196 | .1082E+05 | 5.952 | 91.0 | 136.0 | 90.9087 | 136.0355 | | |
| .201 | 8.196 | .1087E+05 | 5.969 | 91.0 | 136.0 | 90.9121 | 136.0435 | | |
| .201 | 8.203 | .1095E+05 | 5.973 | 91.0 | 136.0 | 90.9077 | 136.0347 | | |
| .130 | 8.203 | .1088E+05 | 5.960 | 91.0 | 136.0 | 90.9057 | 136.0283 | | |
| .144 | 8.220 | .1092E+05 | 5.968 | 91.0 | 136.0 | 90.9070 | 136.0363 | | |
| .144 | 8.196 | .1096E+05 | 5.979 | 91.0 | 136.0 | 90.9039 | 136.0387 | | |
| .243 | 8.205 | .1094E+05 | 5.976 | 91.0 | 136.0 | 90.9092 | 136.0385 | | |
| .285 | 8.196 | .1097E+05 | 5.977 | 91.0 | 136.0 | 90.9124 | 136.0383 | | |
| .187 | 8.196 | .1094E+05 | 5.970 | 91.0 | 136.0 | 90.9093 | 136.0434 | | |
| .257 | 8.179 | .1103E+05 | 5.982 | 91.0 | 136.0 | 90.9089 | 136.0390 | | |
| .299 | 8.196 | .1088E+05 | 5.963 | 91.0 | 136.0 | 90.9158 | 136.0389 | | |
| .285 | 8.196 | .1090E+05 | 5.963 | 91.0 | 136.0 | 90.9083 | 136.0383 | | |
| .257 | 8.179 | .1094E+05 | 5.969 | 91.0 | 136.0 | 90.9142 | 136.0363 | | |
| .229 | 8.196 | .1086E+05 | 5.969 | 91.0 | 136.0 | 90.9103 | 136.0322 | | |
| .243 | 8.196 | .1091E+05 | 5.973 | 91.0 | 136.0 | 90.9124 | 136.0469 | | |
| .229 | 8.196 | .1100E+05 | 5.976 | 91.0 | 136.0 | 90.9043 | 136.0391 | | |
| .201 | 8.179 | .1098E+05 | 5.973 | 91.0 | 136.0 | 90.9098 | 136.0337 | | |
| .243 | 8.196 | .1098E+05 | 5.972 | 91.0 | 136.0 | 90.9072 | 136.0277 | | |
| .327 | 8.196 | .1092E+05 | 5.970 | 91.0 | 136.0 | 90.9100 | 136.0331 | | |
| .257 | 8.187 | .1088E+05 | 5.965 | 91.0 | 136.0 | 90.9102 | 136.0309 | | |
| .271 | 8.179 | .1096E+05 | 5.965 | 91.0 | 136.0 | 90.9070 | 136.0317 | | |
| .257 | 8.203 | .1093E+05 | 5.961 | 91.0 | 136.0 | 90.9104 | 136.0351 | | |
| .144 | 8.196 | .1088E+05 | 5.970 | 91.0 | 136.0 | 90.9062 | 136.0319 | | |
| .201 | 8.205 | .1099E+05 | 5.969 | 91.0 | 136.0 | 90.9029 | 136.0372 | | |
| .201 | 8.196 | .1099E+05 | 5.963 | 91.0 | 136.0 | 90.9107 | 136.0338 | | |
| .257 | 8.187 | .1103E+05 | 5.974 | 91.0 | 136.0 | 90.9096 | 136.0365 | | |
| .173 | 8.196 | .1097E+05 | 5.960 | 91.0 | 136.0 | 90.9071 | 136.0293 | | |

Collection Point 15
of 100
15/01/2011

TM8104

[REDACTED]

| | | | | |
|----------------|---------|---------|---------|---------|
| Constants: | .30000 | .30000 | .30000 | .30000 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

1990

TR81-04

Track data file TDATA00

| | Coarse | Fine | Track |
|--------------------|-----------|-----------|-----------|
| NDRO: | 1.0 | 1.0 | 173.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .2640E-03 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | .30000 | .30000 | .30000 | .30000 |
|----------------|---------|---------|---------|---------|
| Constants: | | | | |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Temp | Angle | Dark Current | Star Mag. | Reference | | Position | | Standard Deviation | |
|------|-------|-----------------|--------------|-----------|-------|----------|----------|--------------------|-------|
| | | | | X | Y | X | Y | X | Y |
| .243 | 8.196 | .1208E+05 | 5.983 | 91.0 | 136.0 | 90.9072 | 136.0337 | .0030 | .0031 |
| .088 | 8.196 | .1209E+05 | 5.975 | 91.0 | 136.0 | 90.9093 | 136.0320 | | |
| .215 | 8.205 | .1210E+05 | 5.973 | 91.0 | 136.0 | 90.9094 | 136.0389 | | |
| .257 | 8.196 | .1226E+05 | 5.984 | 91.0 | 136.0 | 90.9060 | 136.0342 | | |
| .327 | 8.196 | .1213E+05 | 5.973 | 91.0 | 136.0 | 90.9094 | 136.0364 | | |
| .243 | 8.205 | .1209E+05 | 5.974 | 91.0 | 136.0 | 90.9134 | 136.0359 | | |
| .327 | 8.185 | .1208E+05 | 5.977 | 91.0 | 136.0 | 90.9034 | 136.0379 | | |
| .299 | 8.179 | .1211E+05 | 5.980 | 91.0 | 136.0 | 90.9113 | 136.0292 | | |
| .257 | 8.196 | .1213E+05 | 5.986 | 91.0 | 136.0 | 90.9111 | 136.0373 | | |
| .201 | 8.179 | .1208E+05 | 5.975 | 91.0 | 136.0 | 90.9063 | 136.0371 | | |
| .257 | 8.196 | .1206E+05 | 5.965 | 91.0 | 136.0 | 90.9094 | 136.0327 | | |
| .271 | 8.196 | .1211E+05 | 5.967 | 91.0 | 136.0 | 90.9114 | 136.0352 | | |
| .383 | 8.214 | .1212E+05 | 5.972 | 91.0 | 136.0 | 90.9151 | 136.0327 | | |
| .327 | 8.196 | .1205E+05 | 5.970 | 91.0 | 136.0 | 90.9107 | 136.0323 | | |
| .215 | 8.196 | .1205E+05 | 5.972 | 91.0 | 136.0 | 90.9075 | 136.0294 | | |
| .271 | 8.179 | .1218E+05 | 5.992 | 91.0 | 136.0 | 90.9111 | 136.0352 | | |
| .201 | 8.196 | .1215E+05 | 5.984 | 91.0 | 136.0 | 90.9062 | 136.0315 | | |
| .285 | 8.196 | .1205E+05 | 5.967 | 91.0 | 136.0 | 90.9145 | 136.0366 | | |
| .341 | 8.196 | .1212E+05 | 5.986 | 91.0 | 136.0 | 90.9146 | 136.0378 | | |
| .299 | 8.187 | .1214E+05 | 5.980 | 91.0 | 136.0 | 90.9097 | 136.0363 | | |
| .271 | 8.196 | .1207E+05 | 5.971 | 91.0 | 136.0 | 90.9122 | 136.0340 | | |
| .327 | 8.203 | .1211E+05 | 5.975 | 91.0 | 136.0 | 90.9104 | 136.0314 | | |
| .271 | 8.196 | .1212E+05 | 5.985 | 91.0 | 136.0 | 90.9108 | 136.0260 | | |
| .299 | 8.196 | .1215E+05 | 5.981 | 91.0 | 136.0 | 90.9060 | 136.0326 | | |
| .201 | 8.205 | .1209E+05 | 5.976 | 91.0 | 136.0 | 90.9114 | 136.0354 | | |
| .257 | 8.203 | .1208E+05 | 5.970 | 91.0 | 136.0 | 90.9135 | 136.0371 | | |
| .243 | 8.196 | .1215E+05 | 5.980 | 91.0 | 136.0 | 90.9075 | 136.0336 | | |
| .327 | 8.196 | .1210E+05 | 5.974 | 91.0 | 136.0 | 90.9046 | 136.0321 | | |
| .215 | 8.196 | .1215E+05 | 5.985 | 91.0 | 136.0 | 90.9114 | 136.0294 | | |
| .243 | 8.196 | .1215E+05 | 5.983 | 91.0 | 136.0 | 90.9099 | 136.0332 | | |
| .257 | 8.196 | .1209E+05 | 5.970 | 91.0 | 136.0 | 90.9092 | 136.0274 | | |

ORIGINAL PAGE IS
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Track data file TDATA00

| | Coarse | Fine | Track |
|--------------------|-----------|-----------|-----------|
| NIRO: | 1.0 | 1.0 | 195.0 |
| Integration delay: | .1160E+00 | .4564E+00 | .2640E+03 |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 |

| | .30000 | .30000 | .30000 | .30000 |
|----------------|---------|---------|---------|---------|
| Constants: | .30000 | .30000 | .30000 | .30000 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Time | Angle | Dark | Star | Reference | | Position | | Standard Deviation | |
|------|-------|-----------|-------|-----------|-------|----------|----------|--------------------|-------|
| | | Current | Mag. | X | Y | X | Y | X | Y |
| .355 | 8.196 | .1264E+05 | 5.981 | 91.0 | 136.0 | 90.9192 | 136.0388 | .0032 | .0029 |
| .327 | 8.214 | .1268E+05 | 5.989 | 91.0 | 136.0 | 90.9148 | 136.0390 | | |
| .243 | 8.203 | .1271E+05 | 5.984 | 91.0 | 136.0 | 90.9128 | 136.0348 | | |
| .369 | 8.196 | .1265E+05 | 5.975 | 91.0 | 136.0 | 90.9180 | 136.0336 | | |
| .327 | 8.196 | .1276E+05 | 5.981 | 91.0 | 136.0 | 90.9188 | 136.0405 | | |
| .299 | 8.196 | .1266E+05 | 5.983 | 91.0 | 136.0 | 90.9111 | 136.0359 | | |
| .383 | 8.196 | .1270E+05 | 5.980 | 91.0 | 136.0 | 90.9172 | 136.0378 | | |
| .327 | 8.205 | .1270E+05 | 5.988 | 91.0 | 136.0 | 90.9152 | 136.0411 | | |
| .257 | 8.179 | .1269E+05 | 5.977 | 91.0 | 136.0 | 90.9136 | 136.0327 | | |
| .271 | 8.205 | .1268E+05 | 5.979 | 91.0 | 136.0 | 90.9203 | 136.0394 | | |
| .229 | 8.196 | .1267E+05 | 5.981 | 91.0 | 136.0 | 90.9132 | 136.0307 | | |
| .257 | 8.187 | .1262E+05 | 5.981 | 91.0 | 136.0 | 90.9141 | 136.0369 | | |
| .341 | 8.196 | .1271E+05 | 5.989 | 91.0 | 136.0 | 90.9118 | 136.0371 | | |
| .271 | 8.203 | .1265E+05 | 5.983 | 91.0 | 136.0 | 90.9095 | 136.0358 | | |
| .201 | 8.196 | .1262E+05 | 5.978 | 91.0 | 136.0 | 90.9133 | 136.0369 | | |
| .271 | 8.196 | .1254E+05 | 5.972 | 91.0 | 136.0 | 90.9097 | 136.0306 | | |
| .271 | 8.189 | .1259E+05 | 5.982 | 91.0 | 136.0 | 90.9185 | 136.0376 | | |
| .285 | 8.196 | .1266E+05 | 5.975 | 91.0 | 136.0 | 90.9164 | 136.0349 | | |
| .285 | 8.196 | .1267E+05 | 5.982 | 91.0 | 136.0 | 90.9132 | 136.0337 | | |
| .355 | 8.196 | .1257E+05 | 5.971 | 91.0 | 136.0 | 90.9199 | 136.0365 | | |
| .285 | 8.169 | .1265E+05 | 5.977 | 91.0 | 136.0 | 90.9142 | 136.0334 | | |
| .173 | 8.196 | .1280E+05 | 5.991 | 91.0 | 136.0 | 90.9135 | 136.0376 | | |
| .257 | 8.222 | .1258E+05 | 5.976 | 91.0 | 136.0 | 90.9189 | 136.0338 | | |
| .327 | 8.196 | .1269E+05 | 5.982 | 91.0 | 136.0 | 90.9184 | 136.0402 | | |
| .257 | 8.196 | .1266E+05 | 5.978 | 91.0 | 136.0 | 90.9151 | 136.0366 | | |
| .327 | 8.196 | .1268E+05 | 5.981 | 91.0 | 136.0 | 90.9141 | 136.0334 | | |
| .327 | 8.196 | .1266E+05 | 5.979 | 91.0 | 136.0 | 90.9151 | 136.0381 | | |
| .257 | 8.196 | .1266E+05 | 5.982 | 91.0 | 136.0 | 90.9151 | 136.0374 | | |
| .299 | 8.205 | .1269E+05 | 5.984 | 91.0 | 136.0 | 90.9175 | 136.0320 | | |
| .369 | 8.179 | .1272E+05 | 5.984 | 91.0 | 136.0 | 90.9177 | 136.0310 | | |
| .327 | 8.196 | .1270E+05 | 5.983 | 91.0 | 136.0 | 90.9133 | 136.0346 | | |
| .243 | 8.196 | .1262E+05 | 5.983 | 91.0 | 136.0 | 90.9107 | 136.0338 | | |

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Track data file TDATA00

| | | | | |
|--------------------|-----------|-----------|-----------|---------|
| NDR01: | Coarse | Fine | Track | |
| | 1.0 | 1.0 | 255.0 | |
| Integration delay: | .11A0E+00 | .45A4E+00 | .2649E-03 | |
| Thresholds: | .1838E+06 | .9190E+05 | .7352E+06 | |
| Constants: | .30000 | .30000 | .30000 | .30000 |
| Displacements: | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Temp | Angle | Dark | Star | Reference | | Position | | Standard Deviation | |
|------|-------|-----------|-------|-----------|-------|----------|----------|--------------------|-------|
| | | Current | Mag. | X | Y | X | Y | X | Y |
| .201 | 8.196 | .1287E+05 | 5.985 | 91.0 | 136.0 | 90.9277 | 136.0340 | .0032 | .0029 |
| .201 | 8.196 | .1268E+05 | 5.985 | 91.0 | 136.0 | 90.9270 | 136.0285 | | |
| .201 | 8.196 | .1276E+05 | 5.981 | 91.0 | 136.0 | 90.9216 | 136.0279 | | |
| .299 | 8.196 | .1286E+05 | 5.977 | 91.0 | 136.0 | 90.9237 | 136.0282 | | |
| .285 | 8.196 | .1287E+05 | 5.989 | 91.0 | 136.0 | 90.9272 | 136.0303 | | |
| .257 | 8.196 | .1278E+05 | 5.977 | 91.0 | 136.0 | 90.9312 | 136.0308 | | |
| .201 | 8.200 | .1281E+05 | 5.978 | 91.0 | 136.0 | 90.9305 | 136.0280 | | |
| .243 | 8.196 | .1285E+05 | 5.983 | 91.0 | 136.0 | 90.9236 | 136.0294 | | |
| .243 | 8.196 | .1278E+05 | 5.976 | 91.0 | 136.0 | 90.9282 | 136.0309 | | |
| .271 | 8.179 | .1279E+05 | 5.981 | 91.0 | 136.0 | 90.9229 | 136.0260 | | |
| .271 | 8.196 | .1288E+05 | 5.984 | 91.0 | 136.0 | 90.9174 | 136.0282 | | |
| .243 | 8.196 | .1284E+05 | 5.982 | 91.0 | 136.0 | 90.9248 | 136.0321 | | |
| .201 | 8.196 | .1278E+05 | 5.986 | 91.0 | 136.0 | 90.9223 | 136.0302 | | |
| .229 | 8.196 | .1287E+05 | 5.985 | 91.0 | 136.0 | 90.9209 | 136.0333 | | |
| .144 | 8.179 | .1282E+05 | 5.972 | 91.0 | 136.0 | 90.9242 | 136.0276 | | |
| .397 | 8.179 | .1277E+05 | 5.975 | 91.0 | 136.0 | 90.9243 | 136.0257 | | |
| .130 | 8.196 | .1271E+05 | 5.973 | 91.0 | 136.0 | 90.9257 | 136.0305 | | |
| .299 | 8.222 | .1286E+05 | 5.986 | 91.0 | 136.0 | 90.9209 | 136.0327 | | |
| .271 | 8.196 | .1281E+05 | 5.984 | 91.0 | 136.0 | 90.9267 | 136.0327 | | |
| .215 | 8.196 | .1275E+05 | 5.973 | 91.0 | 136.0 | 90.9255 | 136.0298 | | |
| .285 | 8.196 | .1279E+05 | 5.978 | 91.0 | 136.0 | 90.9264 | 136.0336 | | |
| .285 | 8.196 | .1275E+05 | 5.975 | 91.0 | 136.0 | 90.9280 | 136.0370 | | |
| .201 | 8.196 | .1285E+05 | 5.988 | 91.0 | 136.0 | 90.9268 | 136.0315 | | |
| .201 | 8.196 | .1278E+05 | 5.974 | 91.0 | 136.0 | 90.9295 | 136.0288 | | |
| .158 | 8.196 | .1285E+05 | 5.988 | 91.0 | 136.0 | 90.9249 | 136.0246 | | |

ORIGINAL PAGE IS
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ORIGINAL PAGE IS
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DARK FINE MAPS

1. FINE MAP AT 10°C
2. FINE MAP AT 20°C

"Hot spots" on CID array at fine acquisition
position 1A22hex

ORIGINAL PAGE IS
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DARK-FINE MAP

| | | | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 001D5B | 001B7F | 001CE2 | 001CD0 | 001BEF | 001BF3 | 001D01 | 001D40 | 0015DE | 001655 | 0014F8 | 0016B6 |
| 001CC0 | 001BE4 | 001C5E | 001FDA | 001BBD | 001A20 | 001C7B | 001E0F | 001BDF | 001B4C | 001C6A | 001DFE |
| 001CAB | 001C08 | 001BD4 | 001CE9 | 001B80 | 001D14 | 001B52 | 001C3C | 001B59 | 001CE0 | 001C68 | 001D67 |
| 001BAC | 001ABA | 001B47 | 001C62 | 001BF4 | 001B7A | 001CD9 | 001C93 | 001B6C | 001B94 | 001BC0 | 001CFC |
| 001B0D | 001C42 | 001C72 | 001C06 | 001B36 | 001BBF | 001AA5 | 001D8D | 00159E | 001649 | 00159C | 0016A5 |
| 001BDB | 001A98 | 001AF6 | 001C78 | 001B36 | 001C4C | 001CEE | 001C70 | 001BDF | 001C07 | 001ADA | 001D10 |
| 001AD5 | 001B9A | 001A73 | 001CE4 | 001C3C | 001C38 | 001AAB | 001B0D | 001CB0 | 001C6C | 001B40 | 001C66 |
| 001B14 | 001D75 | 001B79 | 001CC1 | 001D0A | 001BFC | 001B3D | 001C90 | 001C56 | 001C6A | 001A3B | 001C0E |
| 001BAB | 001B93 | 001C34 | 001C56 | 001BF9 | 001B8D | 001B3B | 001C15 | 001594 | 0015CB | 00162D | 00168D |
| 001C98 | 001D43 | 001AC1 | 001D74 | 001C3D | 001C04 | 001CD2 | 001C50 | 0019EF | 001CA7 | 001B85 | 001CFE |
| 001C13 | 001C1B | 001AE6 | 001C76 | 001B6E | 001ACA | 001CE9 | 001C78 | 001C30 | 001B95 | 001C54 | 001CA8 |
| 001C25 | 001C4D | 001B25 | 001DBB | 001BF7 | 001B1B | 001BF7 | 001C06 | 001A69 | 001BCB | 001C07 | 001C23 |

CID TEMP: 10°C

N_{mpo} : 96

t_i : .5 sec

$\Delta I_{dmax} \sim 3.5 \times 10^5 e^-$

fine position: 1A22_{HEX}

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TR81-04

DARK-FINE MAP

| | | | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 00184A | 004342 | 0045CF | 004653 | 0045F2 | 00449C | 0046DE | 0046DA | 0034DD | 003454 | 0031DF | 0034F6 |
| 004840 | 004341 | 00456A | 004CC8 | 004570 | 00409C | 0044AE | 004802 | 0045DA | 0042F0 | 0044BC | 0047D2 |
| 0046F6 | 004569 | 0043C7 | 004615 | 0044E5 | 0046AA | 0042AB | 00440D | 0043EC | 00461E | 004495 | 0047B1 |
| 0015A0 | 004253 | 004383 | 0044D3 | 00465A | 0042CE | 0045EB | 0045F7 | 00454D | 0043EC | 004440 | 0047A7 |
| 001363 | 004523 | 00458C | 0044CC | 00420A | 004458 | 004195 | 0047E5 | 0032C4 | 003485 | 0032E5 | 003534 |
| 004420 | 004172 | 0042B2 | 00454E | 004296 | 0044BD | 004698 | 004513 | 004468 | 0044AB | 00420B | 004620 |
| 00424E | 00435E | 0040CA | 0045F7 | 00456A | 0045DD | 004183 | 004242 | 004696 | 004632 | 004358 | 0045FF |
| 0012C1 | 004859 | 004464 | 00469A | 004716 | 0044E9 | 004342 | 004644 | 004626 | 0045DA | 004087 | 00450D |
| 004453 | 00448E | 0045D2 | 00462E | 0044B0 | 004311 | 00436B | 00458A | 003335 | 0033C6 | 003458 | 00356F |
| 004615 | 00474D | 0041AD | 00482E | 004525 | 0044BC | 004604 | 004510 | 003F7B | 004637 | 0042DC | 0045F6 |
| 001501 | 0044EC | 0041F2 | 0044FE | 0042B1 | 004111 | 00467E | 004558 | 004439 | 00443B | 004568 | 0045F8 |
| 0014C2 | 004560 | 00437F | 004614 | 0043D8 | 004253 | 004444 | 00451E | 004114 | 00442A | 00449D | 00455A |

CID TEMP : 20°C

NNDro : 96

t_i : 0.5 sec

$\Delta I_{d \max} \sim 9.7 \times 10^5 e^-$

fine position : 1A22 MEV